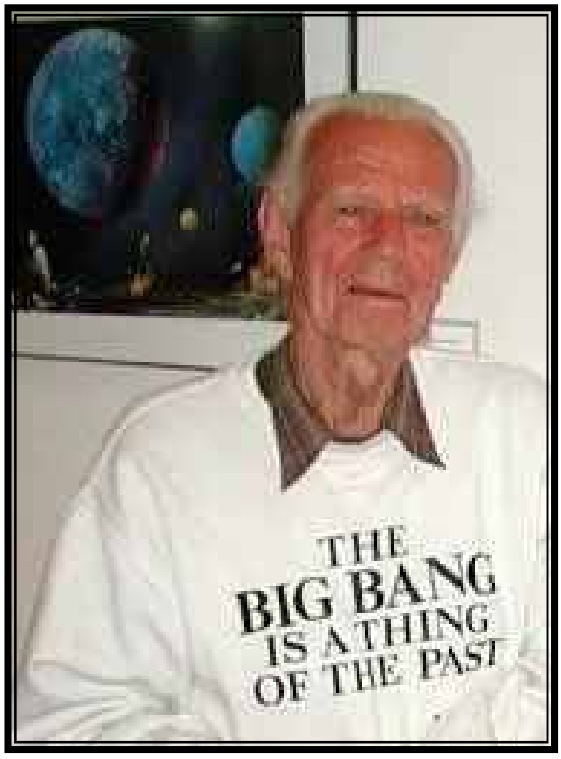
SVAS OBSERVER
Vol.71 No.2* March-April, 2014
Sacramento Valley Astronomical Society
Founded in 1945

John Dobson 1915 2014



When I first became interested in buying a telescope, it seemed only the fanciest Schmitt Cassgrain with all the bells and whistles would satisfy me. The thought of a telescope that wouldn't track seemed ridiculous, and reminded me of my first childhood department store 210x refractor with a light starved 1.5" objective. The Dobsonian design seemed so low tech, that it couldn't possibly meet my needs. Wow was I mistaken!

Following the learning curve that so many amateurs go through, I was soon bitten by aperture fever with symptoms of a never satisfied desire for more and more light. Low powers provide brighter images, a wider field of view, and I soon discovered it just wasn't a big deal to occasionally nudge the scope along. Perhaps there is something to this Dobsonian design after all? Add to that the buttery smooth feel of Teflon bearing surfaces, the extremely stable footprint of a low slung very large mirror, and you can't help admire Mr. John Dobson's design.

Talking about the easy movement and the stable mount is only part of the Dobsonian equation. John was a mirror maker, and he broke all the standing norms relating to mirror thickness and glass types. He proved that mirrors made from very thin inexpensive plate glass were possible, and developed a simple but accurate method of testing his mirrors with the light reflected off electrical insulators located some distance away. He used the star test as a final arbitrator. He helped countless ATM'ers grind their own mirrors, making it possible for the average hobbyist to own a truly large aperture. Observing with a 10" or larger scope is hands down a satisfying experience. Everything looks so much better, not just brighter, because the larger mirrors provide better resolution serving up greater depth, detail, and sharpness with everything we observe.

Thank you Mr. Dobson, for enabling so many to economically utilize your Dob design, and open the heavens with truly stellar views! You will be sorely missed!

Observer Editor

:

Continued page 7

Inside This Issue page

SVAS Event Calendar

March 1st New Moon

March 1st Blue Canyon, weather permitting. Prairie City is our alternate site, but please contact Tim Tingey to plan in advance before attending.

March 21st, General Meeting, Friday at 8:00pm

Sacramento City College, Mohr Hall Room 3, 3835 Freeport Boulevard, Sacramento, CA.

March 30th New Moon

March 29th Blue Canyon, weather permitting. Prairie City is our alternate site, but please contact Tim Tingey to plan in advance before attending.

April 11th General Meeting Friday at 8:00pm

Yes it's really April 11th the second Friday, Good Friday is a day off for Sac City College!
Sacramento City College, Mohr Hall Room 3, 3835 Freeport Boulevard, Sacramento, CA.

April 14-15th Total Lunar Eclipse, see p-5

April 26th Blue Canyon, weather permitting.
Prairie City is our alternate site, but please contact Tim Tingey to plan in advance before attending.

April 29th New Moon

Contact Walt Heiges for info.

Star Party Schedule for 2014

Mar 1st
Mar 29th
April 26th
May 31st
June 28th
July 25th,26th, Star-B-Q
Aug 23rd
Sept 27th
Oct 25th
Nov 22
Dec 20th

Blue Canyon

Golden State Star Party GSSP

June 25 - 29
Signup Now!

Pam Shivak, the coordinator of International SUN-DAY organization and I, have been coordinating efforts to present this event. I have made the SVAS a participating partner with their event. She has announced our participation on their FB group and has put your logo on their web page with a link back to the SVAS group.

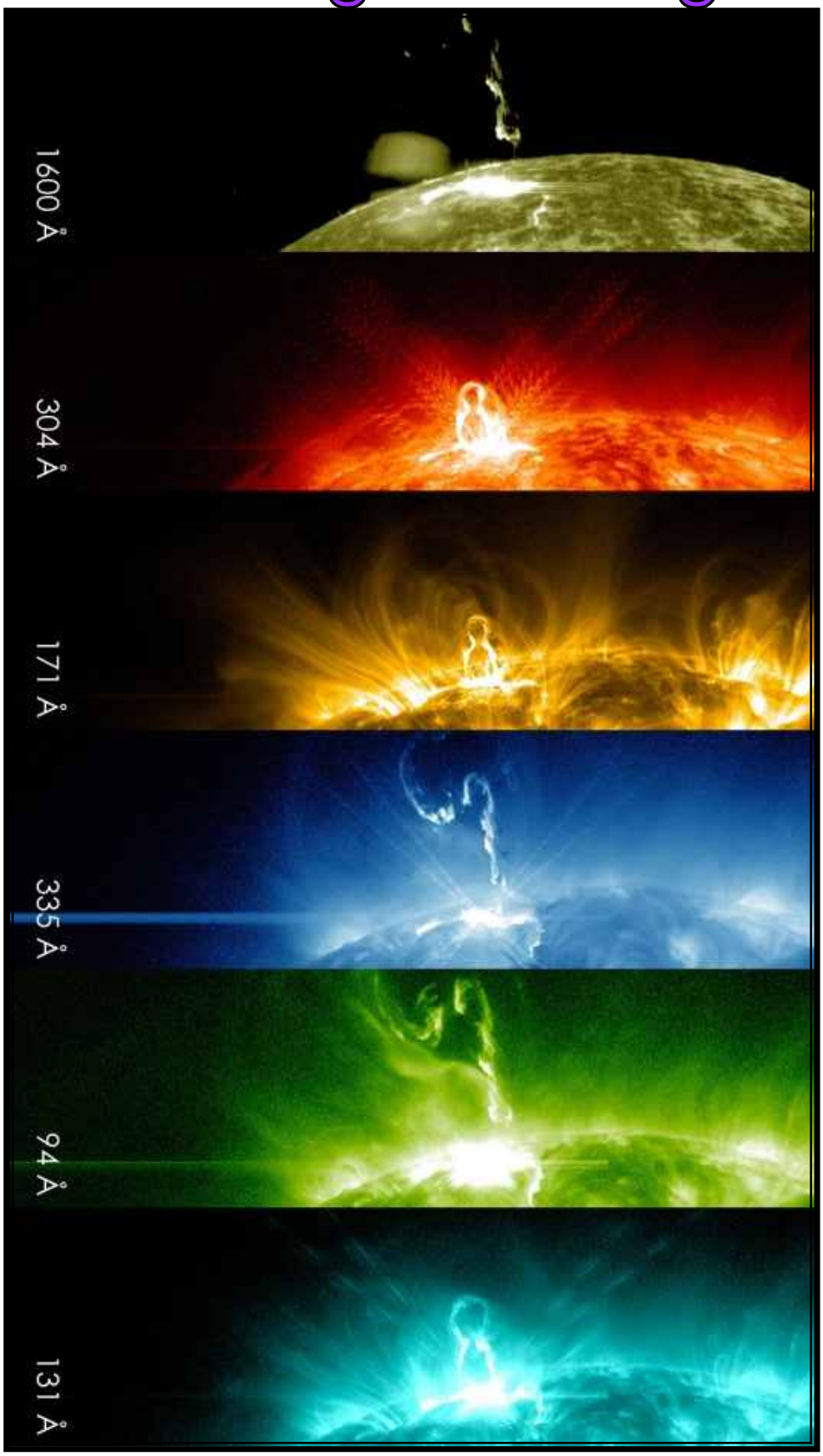
In exchange, we will receive free solar glasses. We ask you to visit their site, and I encourage our members to not only join the International SUN-day facebook group, but Stephen Ramsden's CBSAP facebook group as well. We look forward to you sharing your plans and pictures with the SUN-day group and I thank you again for your participation. Sounds like it will be a great event to share with the folks in Sacramento Valley.

Below are the links to the SUN-day and facebook groups, where you will also find the EVENT where SVAS members can accept the invite and indicate they are GOING.

Walt Heiges
SVAS Vice President

http://solarastronomy.org/sunday.html
www.facebook.com/groups/InternationalSUNday/
www.facebook.com/groups/batessolarastronomyproject/

First Moments of a Solar Flare in Different Wavelengths of Light



On Feb. 24, 2014, the sun emitted a significant solar flare, peaking at 7:49 p.m. EST. NASA's Solar Dynamics Observatory (SDO), which keeps a constant watch on the sun, captured images of the event. These SDO images from 7:25 p.m. EST on Feb. 24 show the first moments of this X-class flare in different wavelengths of light -- seen as the bright spot that appears on the left limb of the sun. Hot solar material can be seen hovering above the active region in the sun's atmosphere, the corona.

Solar flares are powerful bursts of radiation, appearing as giant flashes of light in the SDO images. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel.

Image Credit: NASA/SDO

Total Lunar Eclipse April 14-15

by Ralph Merletti

A total eclipse of the Moon, the first in a series of four consecutive total lunar eclipses visible in some part from California during these two years (2014-2015), will occur around midnight, Monday, April 14th-15th. The Moon will move through the southern portion of Earth's shadow.

Local TV stations in the Sacramento area may be showing live progress of the beginning umbral phase during their 11pm news broadcasts. At the beginning of totality, the portion of Earth's (sunset) rim casting the shadow includes an area off the east coast of Australia, while the portion of Earth's (sunrise) rim casting the shadow at the end of totality includes the South Atlantic Ocean. At mid-eclipse, the Moon's north polar rim will be very close to (just SSE of) the center of Earth's umbral shadow. Also visible nearby will be the planet Mars, just a week past opposition, but near its closest(?) at this apparition....visit <skypub.com/marsprofiler> for details. Will we finally get a clear sharp views of the Earth eclipsing the Sun from the Moon's surface (the Chinese lunar lander in the Sinus Iridium), or from a satellite in lunar orbit, or do we have to wait even more years for the last great spectacle in our part of the solar system, photos that should have been available decades ago? Does NASA currently have any interest in sending a probe to the moon to record this type of event? Such photographic data could assist in assessing global atmospheric changes. Let's remind NASA just how much we desire an ongoing United States Lunar presence!

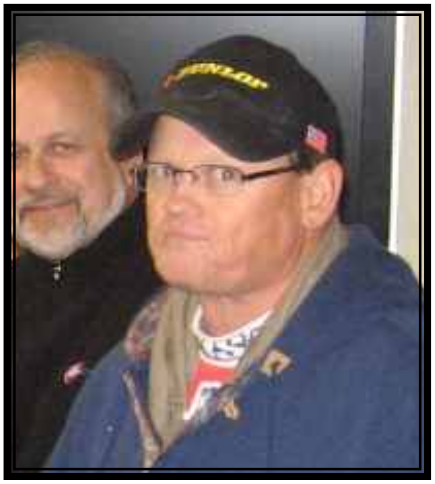
Monday—Tuesday, April 14-15, PDT

9:52pm	Monday, approximate beginning of penumbral entrance.
10:58pm	First umbral contact .
12:06am	Total phase begins Tuesday morning, April15th.
12:45am	**Midpoint / deepest eclipse.**
1:25am	Totality ends.
2:33am	The Moon leaves the umbra.
3:39am	The penumbral phase ends.

Messier Marathon

East SVAS West

by Tim Tingey



SPRING MESSIER OBJECTS OF INTEREST

Spring will soon be upon us with precious little time to prepare for a Messier Marathon. Any interest among club members can be posted on the clubs SVAS Yahoo Groups page or by Contacting Lonnie or myself. March 1st and March 29-30th are the next and only moonless nights generally accepted this year to find all or 90% of the Messier List in one "evening". This "evening" would be a half hour after sunset to a half hour before sunrise. If it proves more viable among club members, we could split the messier list thru March and October sessions and finish in fall or sooner – maybe at Star-B-Que ?.

A Marathon: Are you up for it, if so give us a call? You'll need heavy cold weather cloths during February and March. Layering is the secret to staying warm, also a hat to retain body heat. Wearing a hat can keep your feet and hands warm.

Having some hot fluids to drink (not coffee) and something to eat will get you through the night. Here we go, my telescope of choice is a F4/5 16 inch Dob. Having the extra aperture really helps, but smaller scopes will work just fine. About a half hour after sunset start looking for the first objects, they must be found quickly before they disappear below the horizon. The first 8 objects are as follows (in order): M77 CETUS, M74 PISCES, M33 TRIANGULIM, M31 ANDROMEDA, M32 THEN M110 (ALL IN ANDROM) , M31 will be visible, the other two probably won't be in the valley, too much light and atmospheric pollution. Next, M76 AND M34 PERSEUS. Once you've found these you can proceed at slower pace. Next is M45 TAURUS, M79 LEPUS, M42, M43, and M78 in ORION. Then M41 CANIS MAJOR, M93, M47, M46 PUPPIS, M50 MONOCEROS, M48 HYDRA, and M1 in TAURUS.

MESSIER MARATHON NOTES AND IDEAS

US, M35 GEMINI, M38, M36, M37 AURIGA, M44 M67 CANCER. So far you been at it for about 2 ½ hours and found 27 M OBJECTS and it's about 9:20. Do you feel like finding another 16 MESSIER objects? It's doable by 11:40 I assure you. That would total 42 M objects nailed in one evening and you weren't up that late. With a go-to scope it's even easier. But say we find only 20 or so objects our first night, wasn't it still worth it?

This is a great opportunity for beginners to find those objects that have eluded them, to study them, and find other objects of interest that lie next to them or in the same field of view. The objects found in my 16" f4/5 can be found in binoculars or a 3.5 inch refractor under dark skies, especially on a go-to mount which provides accurate pointing . Bear in mind that you're starting only a half hour after sunset in light/air polluted skies-so a 5inch refractor, a 6inch reflector, Mak or Schmidt Cassegrain, are better suited. Most important is making sure your finder and main tube are accurately aligned with each other. A Telrad, or red dot finder, is a plus for initial aiming-then use your finder to center it in your eye piece. You'll use stars and constellations as navigation points, for example: M35 is just as simple as finding the "toe" of Gemini---bright Eta. A short hop to the northwest will capture this open cluster. M41 is found when drifting south of Sirius- the brightest star in the sky. In Auriga go directly between stars Theta and southern Beta. Half way between them and slightly to the east is M37.

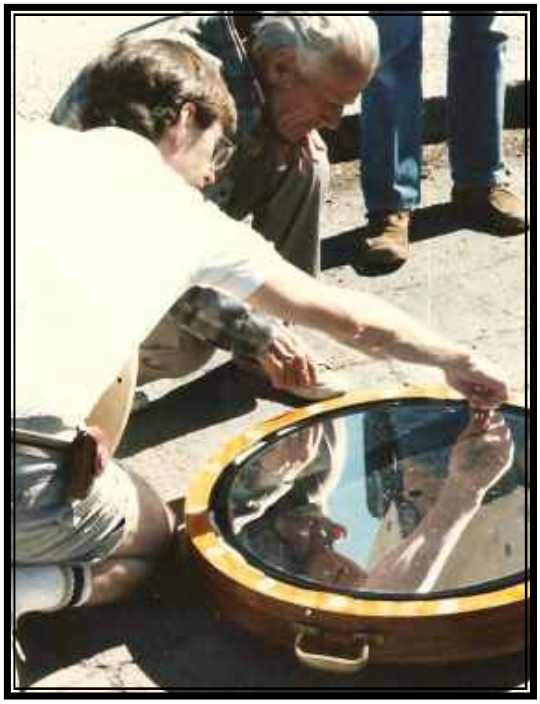
Sound interesting? Give a Messier hunt some serious thought, with enough interest we could hold a marathon in March. At the very least we could nail 'em all over the summer and into fall.

Remembering John Dobson 1915 2014

By Dave Buchla

John Dobson was a true innovator and will be remembered for his love for astronomy as much as the telescope mount that bears his name. He was one of a kind; they broke the mold after him. In 1970, I was program chairman for the astronomy club in Livermore. John came to dinner at my house and afterward talked to our astronomy club in Livermore about using large light weight mirrors – something that was considered to be "impossible" by traditionalists. After his talk, 8 members went to his classes to make their own telescopes. I was very proud when he pronounced my porthole mirror a "fine mirror" after doing his well known "in and out of focus" star test. I enjoyed listening to stories he would tell about his days in the monastery and how he would sneak out at night to work on his telescopes. I recall those classes as if it were yesterday and how much I looked forward to them. Years later I went to dinner again with him before he talked to SVAS, this time on his ideas of cosmology (John was a "steady-state" astronomer).

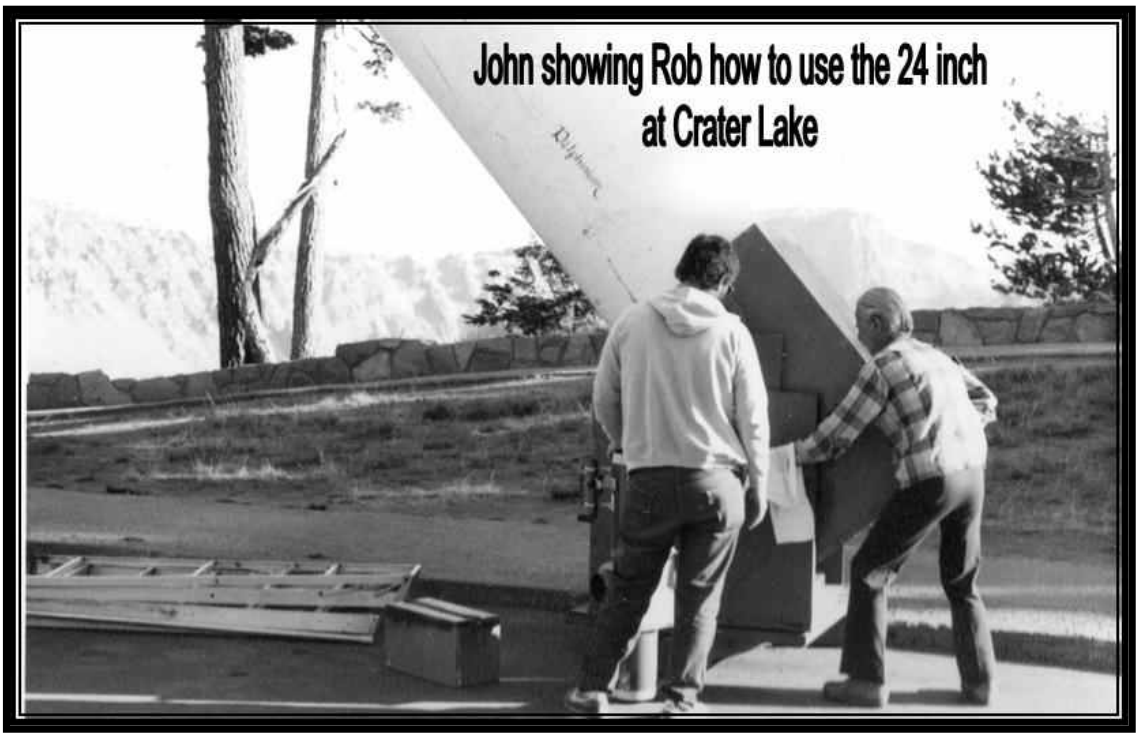
John was a modest man but with a tremendous love for astronomy; he inspired and guided many amateurs to construct their own very basic but functional telescopes. He loved to share his passion for astronomy with the public, taking astronomy to the streets of San Francisco as a founder of the San Francisco Sidewalk Astronomers. He will be missed by all who came in contact with him.



Such a simple design, yet it changed telescoping forever. Rest in peace John Dobson.

by Perry Preston Porter

Remembering John Dobson **By Mel Bartels** Reprinted with Mel's permission



The phone was ringing; I had a grinding tool in my hands. Could I pull the tool off the mirror, throw some water on my hands and answer the phone in time? In those days there were no smart phones, no answering machines; phones were tethered to the wall with a cord.

I managed to grab the phone off the hook my hands dripping with water and grit and say, "Hello". It was Rob on the other end, asking if I'd seen the article in the Register-Guard: something about telescopes and Crater Lake. News came by newspaper tossed on your doorstep by a delivery boy. This article was talking about "18 inch and 24 inch Sidewalk telescopes available for public viewing". Rob was pretty excited. The year was 1981 and I was skeptical (I guess some things never change).

"Yes, I saw the article. But Rob, there's no such thing as an 18 or 24 inch Sidewalk telescope. The reporter must be confused; he's talking about the length of the telescopes. These scopes must be small refractors, maybe two or three inches in aperture".

Telescopes were occasionally referred to by their length, since aperture very rarely exceeded several inches. Rob was insistent, and besides Crater Lake is a beautiful destination, he argued. So Saturday morning he swung by in his 1980's van equipped with the latest gadget, a miles per gallon sensor and display, for us to play with on the drive. I said that some things never change. We talked telescopes on the way as the scenery changed from valley to forest, from fields to snow drifts, from valley air to crisp cool mountain air.

The final stretch into Crater Lake goes around breathtaking drop-offs and curves in the road, which hid our parking lot destination at the rim until rounding the final curve. I stopped talking in mid-sentence. "Rob, those are giant telescopes – look!" Pointing out the obvious is all I could do. Before Rob could park the van and come to a full stop, I swung open the door and jumped out, running.

I couldn't believe it: giant telescopes in cardboard and wooden frames. How could this be? A thin wiry guy was in charge, showing people views of the Sun and sunspots. One visitor from Sweden was arguing that the sunspots were not real. The guy in charge was practically yelling, "Those are sunspots. Each one is bigger than the Earth!" The visitor left unconvinced.

I didn't quite catch the guy's name. Did someone say, "John Dobson"? He was a force of nature though, a dynamic personality, and a way of talking that reminded me of cult leaders and gurus.

I could not stop looking, teasing details from the sleeping scopes. There was not a single machined bolt or adjustment

screw and the thin mirrors looked to be from plate glass. On the upper end were sliding tubes for focusers and recycled eyepieces. Impossibly crude and contrary to received wisdom. Oh, and John's son was catching a nap in one of the giant telescope's tubes. John had named the telescopes with counterculture names like Delphinium and Stellatrope and 'The Little One' (which wasn't so little). It was all so… different.

I felt tempted in a new way. I had the apple in my hand and couldn't wait to take that first bite. We got in line and waited our turn at the 24 incher. Decades later I still find myself at a loss for words at those first views. Perhaps Ellie's words from Sagan's Contact, "I didn't know, I didn't know" come closest. We got in line again and again.

The Sidewalk Astronomy setup at Crater Lake, 1981

I asked John Dobson about the telescope's details. He was more interested in talking about what we were seeing through the eyepiece and the universe we live in, though he did talk at length about the materials used for the telescope's motions. He didn't build the scope for the scope's sake; he built it to see the universe and to show the denizens of Earth our place in it.

Around midnight the crowd thinned. John suddenly announced that he was tired and going to bed. We could use the scope all night for ourselves as long as we locked it into position and aimed it away from the morning Sun. Are you kidding me? I thought of the contortions I had to go through for permission to use the 15 inch Cassegrain at Pine Mountain Observatory.

I'd looked through a couple of 24 inch Cassegrains. The view in Dobson's 24 inch could not have been more different. The tiniest brightest colorful specks of light for stars, the dark field even though the Moon was rising. We stayed at the eyepiece all night, one person at the rear of the scope helping push it along and the other up at the eyepiece. It was our first introduction to the art of ladder observing. "A little more, yes… WOW!" This was quickly followed by the ladder shake from the person below. "Oh man, hurry up and look".

Before we could catch our breath the skies brightened – it was 4:30am. We locked up the scope and headed to the van for the drive back in the morning sunlight. "I have got to build a 24 inch", I kept repeating. Finally Rob slowed down and said, "If you say that one more time, I'll throw you out and you can find your own way home!"

Within weeks I had ordered a 24 inch Pyrex blank from Corning in New York and began corresponding by letter with Bob Kestner, one of John's protégés who would later, as a top professional optician at Tinsley, lead the ef-

fort to grind and figure the COBE corrective lenses for the Hubble Space Telescope.

John's telescope design was opposite to all that I had previously learned. He used simple non-precision recycled parts. Everything had to be push-pull adjustable. The scope didn't track, instead it used an altazimuth mount where the scope was pushed into position by hand and when let go, staying put, even in the night breeze. There was no shaking at the eyepiece. The vast majority of scopes of that era quivered in the wind, shaking after touching the focuser. The Cave Astrola 12 inch f8, a monster of a scope and the largest portable telescope that I had looked through, had a maddening dampening period at the eyepiece. One literally counted to twelve before looking through the eyepiece, being careful to not bump it with one's eye. But John's scope was nothing like that.

Moreover, his 24 inch, 18 inch, and 12 inch mirrors were plate glass, a material that drew serious frowns from the experts. John had removed every item and accessory that was not absolutely essential to the task of viewing, simplifying the design and substituting stiff materials like wood and cardboard for metal. His mirrors floated on suspension arms, held in position with slings. Steve Jobs at Apple would become famous decades later for similar design aesthetics.

As I worked on my 24 inch, Mike and I planned a trip to Portland to scour the surplus ship yards for salvage plate glass. John had told me where he got his glass from surplus ship yards. Mike and I hopped from place to place. They all told us the same story. "Some white haired hippie from San Francisco came through a few years ago and bought up all the glass". In desperation, we began looking around the yards, not taking the guy's word who stood behind the counter.

Finally near the end of one Saturday I spied some glass in the back of this joint – a lot of it. The guy up front didn't know about it, otherwise he would have sold it to John Dobson. We negotiated a price, $400 for a huge stack of glass weighing hundreds of pounds. We returned the next weekend with my station wagon. The guy had taken the least interesting half of the glass and moved it to the front, crossed his arms and insisted that this was all that there was the previous week. While Mike argued with him, I looked around and found the missing half in the back. I drove the station wagon to the back and loaded it up. On my return Mike's eyes widened when he saw the glass. We quickly began covering it with the glass stacked in the front as the guy tended to other duties. This guy was an ex-Marine, ex-fighter, and could have pounded the living daylights out of us just by glaring at us. I knew this was true because his tattoos said so. I gave him the check saying, "$400 for all the glass in the station wagon - that was our deal, yes?" I pointed to the station wagon, weighed down with glass. With an evil smile on his face, the guy said, "Yep".

I drove out of there as fast as I could, the station wagon bouncing on its rear axle. Whew, we'd pulled off Mission Impossible. Jim Phelps would have been proud. At least until Mike said, "Say, Mel, that check you handed him had your address on it?" I lived in fear, closed the drapes, and turned off the lights at night for several weeks until I was convinced the guy was not coming after me.

We had about 60 pieces of plate glass, mostly 12 inchers with a few 16 inchers. Mike immediately began a 16 incher – a size heretofore impossible to contemplate. Between what we turned into mirrors and what we sold, we kept busy for years, happily making mirrors with cheap materials that Mike would scrounge up: bags of titanium oxide for polishing compound and road tar for pitch. The thinnest glass served as tools.

My life would intersect with John's from time to time. The most memorable was a week spent with Dobson at John Casino's place in Seattle in 1989. Casino was finishing a 36 inch and needed help with the final tuning. As you can see from the Ronchigram, the mirror suffered from an overcorrected outer zone. Casino was experimenting with mirror mounts that warped the thin glass into a better figure.

Dobson in private was quiet, thoughtful, and prone to thinking in long periods of silence. He talked about WWII, working for the war effort as a chemist, and having his soul shaken when the atom bomb went off. He talked about China and his studies of eastern thought. He talked about sneaking out of the Vedanta monastery to get buckets of sand from the beach, sifting the sand into sizes to grind mirrors. I tried sand, it's tough going grinding itself into mud almost instantly. What sheer determination John had to make mirrors from such crude materials.

John also talked me into the star test. John could do that; he could be quite convincing. John's mirrors were outstanding; they gave superb star tests. They had rather long focal lengths, optimized to work with simple eyepieces to give the best magnification for sidewalk astronomy.

Later I found myself and my newly minted computerized telescope talking to John at an Oregon Star Party. He complimented me on my design.

John Dobson never strayed from his goal: showing as many people as possible the wonders of the Heavens so that they could at first see, and then understand. He was ignored by the establishment for years: Sky and Telescope's editor-in-chief famously writing that, "...your shortcuts...can hardly lead to satisfactory instruments of the kind most amateurs want in these large sizes. Porthole glass, makeshift wooden altazimuth mountings...are no longer suitable for telling thousands of other people who lack your knack of getting something "passable"." At the Riverside Telescope Makers Conference, a senior editor gave icy stares, refusing to look through Dobson's telescopes because of the wooden slatted spider vanes, un-machined construction and psychedelic paint schemes. It is a cautionary tale that expertise can be at a loss when confronted by invention. Even after his breakthrough, John spent years trying to get his book, "How and Why to Make a User-Friendly Sidewalk Telescope", published. The book is unusual in that it combines product vision, simplified telescope making techniques, and honed through the teaching of thousands of telescope and mirror making students.

What people failed to understand, and sometimes do not understand today, is the revolutionary nature of John Dobson's design. It takes advantage of a mix of precision parts where it mattered (large aperture thin plate glass mirrors, mirror mountings with floatation levers and slings, stiction based Teflon, cork and Formica movements), and non-precision parts where it did not

matter (cardboard tubes, slide focusers, wooden altazimuth mounts). Through his perseverance and intelligence, John gradually came to understand what it meant to support large thin mirrors, materials that led to smooth high powered motions at the eyepiece, and a mounting design that was rock solid. Prior to the Dobsonian, there was hardly a single telescope that I can remember that didn't have some shake at the eyepiece, that didn't have trouble making small motions at high magnifications.

John radically removed features that were not essential to the mission of showing objects through the eyepiece of a large aperture telescope. In particular, John eschewed tracking mounts, and expensive eyepieces and focusers. This made his design all the more compelling for its single mission to show people the heavens through large aperture telescopes.

John further developed mirror making techniques for large diameter thin plate glass mirrors, and their mounting in a telescope. John was first to widely disseminate large pitch lap making techniques. He brought back to life star testing, first used successfully by John Hadley in 1722 to make the first true reflecting telescope with a parabolic mirror. Along with his sidewalk astronomy, we must never forget the countless telescope and mirror making classes he conducted over the decades, particularly up and down the west coast. He made mirror making accessible for anyone.

Further, it was a requirement of John's that the design use inexpensive recycled materials. Since John did not invent a gadget or material (as he sometimes pointed out), his design could have been built decades prior. But it wasn't, because no one thought of or put in the blood sweat and tears it took to create a revolutionary new design.

Today we celebrate design and understand its importance. Product design is the focus of individuals and companies worldwide. In John's time, it was novel and misunderstood. For example, look at the early copies of his telescope design by some amateurs. They tried to add precision back in, walking away from the compelling simplicity of the Dobsonian. It took years for amateurs to appreciate the design. John's students made numerous large aperture telescopes, introducing the era of the large aperture, low cost telescopes in amateur astronomy. Through articles written by John's students in Richard Berry's Telescope Making Quarterly, the design and techniques spread like wildfire. Most popular was the 16 inch f5, a size and focal ratio that continues in popularity today.

John would say that the value of a telescope is in how many people look through it, not how burnished the wood. He put his design in the public arena, eschewing financial reward. John was proud of his design and pleased with the growth of sidewalk astronomy, though the world didn't turn out exactly how he wanted: amateur astronomers too often focused on the telescope design rather than sidewalk astronomy, and his cosmology fell into disfavor.

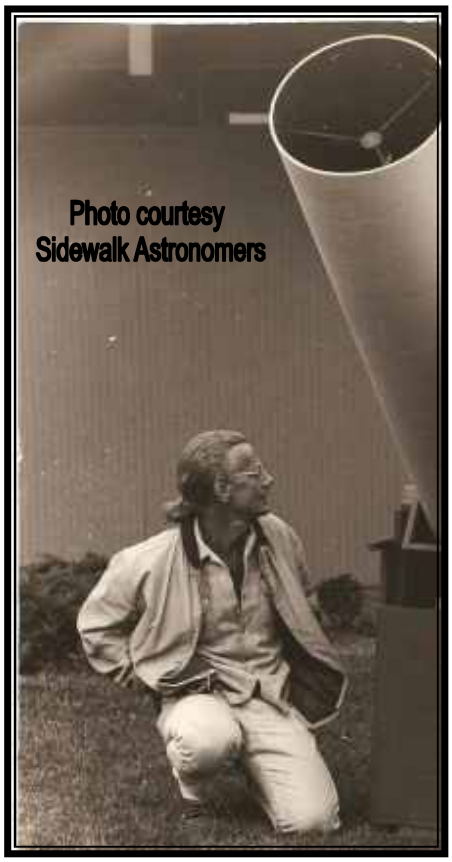
John was unfailing kind to me over the years. He was a force of nature that comes along once every few generations. John will be missed; the Earth is a lonelier place without him. But like a great comet, John will not be forgotten.

I loved John dearly. He was my friend.

By Carl Zambuto

Reprinted with Carl's permission.

I first met John in either 1989 or 1990, so he was in his early 70's at the time. He was still traveling with his female companion prior to her death from cancer. He was the speaker one night during that timeframe at an astronomy club in Livermore California. I was living in the San Joaquin Valley, not too far away, and was either considering attending the club or had just recently joined, I don't recall at this point, but what I remember was I knew the speaker had something to do with why my newly acquired first telescope, a Coulter Odyssey, was called a "Dobsonian". There was even an article that came with the telescope selling the merits of the Dobsonian design. So I thought it would probably be a good thing to go and hear this guy.



I was not prepared for what I would hear. In those days John had a lot more energy, so he could give long talks. He did two segments, 45 minutes each, with a break in between. I remember at the break I couldn't wait for the second half. I was grossly engaged, because he was going somewhere. What he usually did, as many of you here know, is when given the chance he would extol his entire cosmology, and he did just that.

I recall at the break I was saying excitedly to myself, "I know where he is going with this. He is going to take us Home". You see, I recognized in my guts what was going on. I got it right away. While others in the audience were sparring with him intellectually, I understood him spiritually. I saw and connected with the monk who married science and philosophy. I FELT what he was talking about, and so in that I understood its importance. I "got" John Dobson on our first meeting.

After the talk I went up to him and told him how much I appreciated that he talked to us. He gave me a flyer, the one he has probably given out hundreds of thousands of times.

The second time I saw him I was living where we are now, in Washington State. He was staying at Garth Eliassen's home in Monmouth Oregon, where in later years he spent a month every year. He was giving a talk at the University called The Apparitional Universe. I planned an overnight stay and went down to hear him lecture. I brought my sidewalk telescope and set it up with the others where the public looked at Jupiter afterward. He heard I had driven from WA to see him, and so I was invited over to Garth's house for his favorite ice cream and a visit on the front porch. We talked telescopes and such, nothing really important, but we had our first real visit. He was impressed that someone drove so far, just to hear him talk.

I don't remember when I saw him next, but the next event for me was when John Casino, who lives in Nisqually WA just a few miles away could not have John at his house one August as usual. I volunteered, and John Dobson came and lived with us for three

weeks. What an experience that was.

He loved his walks, every day, for miles. He would walk down the road without a shirt on, and forage from the landscape. I went with him on several of these walks. He taught me about plants and berries and what he used them all for. He even ate some berries that are deemed poison, but he said they are not poison to him. He loved to sit in our kitchen and read Einstein. I gave him all my Einstein books to read, and he spent a lot of time doing that and talking. He talked a lot. He also loved to watch movies. He liked stopping the film and talking about it.

It was during that three weeks we had our first figuring machine, LURCH, here, but at that time I didn't know it was a figuring machine. So it sat in the corner, embarrassingly, under a sheet. I worked on an 8" mirror on a barrel by hand, during that timeframe. I recall when John was first dropped off at our home for the three week stay the first thing he said was "here is my orange juice can for grit". He had saved the cardboard container, for dispensing grit. Of course, that is how he connected to reality around him :)

One other very important day for me was when I taught nine students in our telescope class in Longview Washington, not too far from where we're living. Dobson was at John Casino's house in Nisqually Washington when we finished, only an hour and a half away, so I had arranged for him to come down and give a commencement talk for our students and have first light with all of them. That was a very special day, for me. John Dobson was going to be the commencement speaker for a Zambuto telescope making class. These new students, with their first telescope, got to have first light with JD. And I remember when he arrived. He was being chauffeured by a friend of mine from Olympia. I was waiting there to greet him, and we all had our club T-shirts on for the local club whose members were finishing their scopes. John got out of the car, took one glance at my T-shirt, did not say hello or how are you, but quipped, "The Moon is wrong". I looked at the t-shirt, and yes of course, the wrong side of the Moon was lit in the twilight scene with the silhouette of a Dobsonian telescope on the horizon.

That's how much he noticed things. And that was one of his great attributes, and gave rise to my favorite saying from John. "And you owe it to yourself to notice".

In the years following I would meet up with him at a star party locally, or drive to Garth's house when he was there each year in his later years, and spend an overnighter visiting with him. And as most of you know, we made a very special mirror for John, whose story and photos were catalogued here on this site.

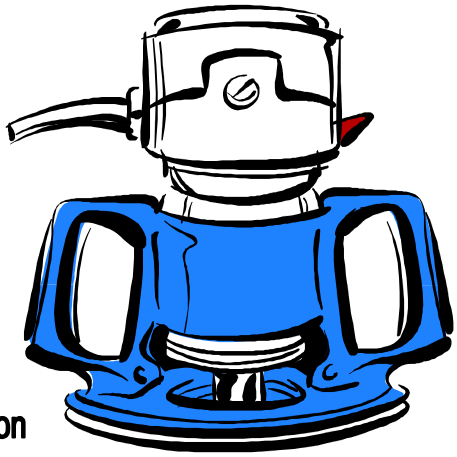
The last time I saw John was in August 2012 at Garth's house. I did not visit last year, we were occupied with the coating lab project. But each time I saw him in the later years, I always said goodbye to him in my way, because I knew each time it might be the last. And so finally it was. As I was leaving that August afternoon, walking away from that same front porch where we first got together and chatted many years earlier, I heard John say to Garth, "I really like him. He collects information".

That was the greatest compliment I would or could ever want from John Dobson. He said when interviewed in the PBS series “The Astronomers”, that what he stands for is information. That is what John represented. I find that people who truly collect it are more rare than not, and so for me, that was the greatest compliment of our friendship.

Needless to say, John had a profound effect on my life and understanding. I even used some of his cosmology when I taught telescope making. I remember years ago thinking one day, "What will I do when John Dobson is no longer with us?" Well, times change, and we change with them. We grow and we mature, at least hopefully. By this time, so many years later I was ready, but even still the world is no longer the same with his absence. The one exception being this; He is most certainly still alive in our memories, and in the influence he was to all of us.

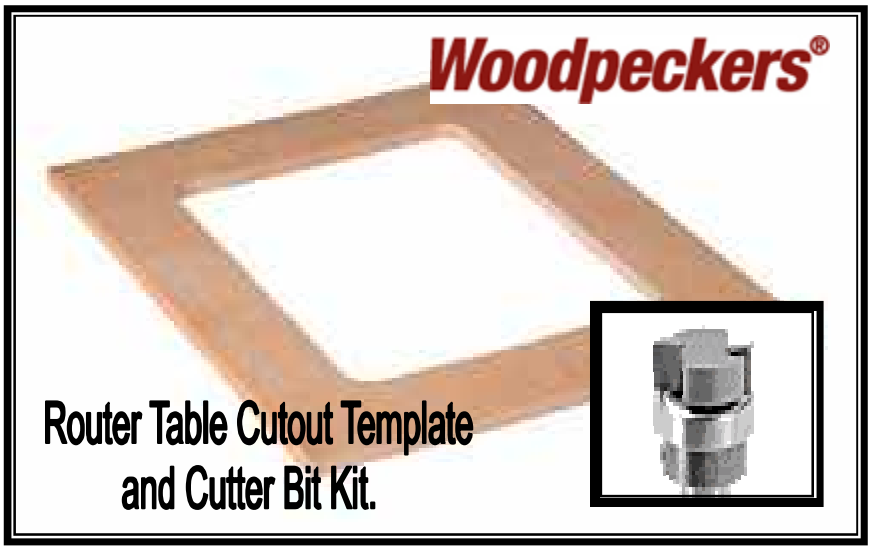
The Mighty Router

Part 2
The Router Table

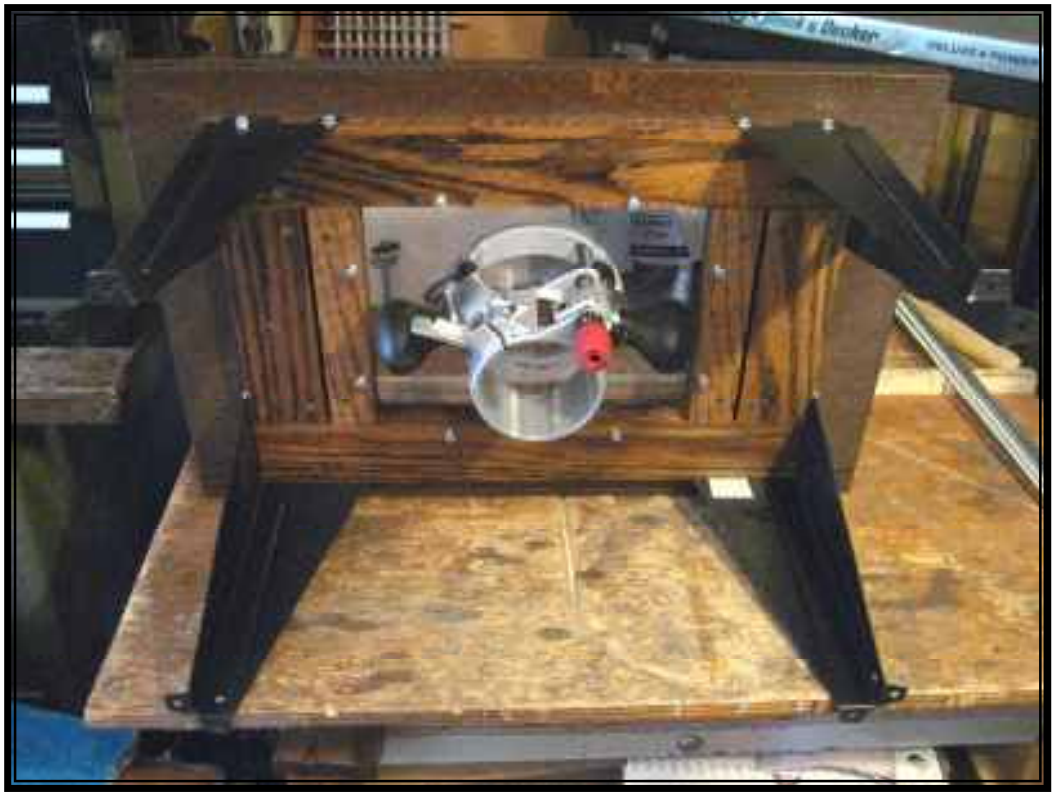


by Lonnie Robinson

I'm a do it yourself guy, so building my own Router Table was my first option. I had an old commercial router table made completely of steel, but the top wasn't flat and there was no edge to clamp a guide to! It had some great steel legs, so they ended up on my new table. The legs could be easily made of wood, but the steel ones worked really well. A few years ago, I faithfully watched a TV series called The Router Workshop. I never knew the router could accomplish so many extremely accurate operations! I especially liked the router table they designed, because it had a removable center mounted router plate, so cutters could be easily changed. Their fence guide was so simple, just a straight square piece of HDPE (high density polyethylene) plastic that could be clamped to the table in any desired direction. It worked so well I had to copy the idea!



Router Table Cutout Template and Cutter Bit Kit.



My must have list was short: The table needed to be small for easy counter top use and compact storage. I liked the removable router plate, but commercial ones were a bit expensive. I cut out my own from a piece of 3/8" thick clear polycarbonate plastic. Researching the available commercial router plates revealed several different dimensions, so I utilized the size of the one I would most like to buy in the future. Woodpeckers woodworking supply offered a 9.25" x 11.75" cutout pattern and template cutter bit packaged together for about $40. Their commercial router plates offered all the wanted fea-

tures, so the size decision was made. The table top must hang over enough at the edges to permit clamping the fence and any necessary work piece stops. I also wanted a dust collection port installed in the fence. A short list, but all these features are a bit hard to find together in commercially made tables.

Starting with the table top, I used an old piece of Formica counter top cut to 16” x 24” and reinforced the bottom with 3/4” thick oak strips. They are mounted in just the right position to attach the legs to, and allow enough clearance for the router to be easily removed out the top. Every part was stained first and then varnished to seal the wood from moisture, to prevent warping, and reduce wear and tear. It was great fun to cut the router plate opening with the premade pattern. The cut was just over 3/8” deep in the table, for the plate, and then eight 10-32 bolts were inserted from underneath for plate height adjustments. After adding the legs it all came together nicely.

The fence, made from two long pieces of oak attached at right angles, was a bit difficult to make perfectly straight and square. It took a bit of custom sanding and fitting to achieve. I made two fences the same way, the extra one for my drill press. It already had a wooden platform bolted to it, so the fence was a great addition. Now the fences needed some clamps, not ordinary clamps, but ones with a tighten-

ing knob instead of a T handle. Bessey 1.5” clamps (Lowe’s) with the T handle removed and Radio Shack knobs secured to the shaft did the trick! These knobs make loosening and retightening the clamps quick, secure, and effortless! Next was a 2.5” vacuum dust port from Grizzly Industrial (part # T23827 for $1.95), it fit perfectly over the cutter hole in the fence. The last photo shows the router plate adjusting bolts, and how they are installed underneath accommodating plate support and height adjustments.

The last table addition will be a safety stop switch. Again Woodpeckers to the rescue with a great switch design that can be easily attached to one of the legs, and features plugs for the router in back (Part# 13K-PRS3100, $34.99).

In the next Mighty Router edition, part 3, let’s discuss some necessary router bits, what their functions are, and suggest which ones to buy for a core set. Then in future editions we’ll delve into some special templates, trammels, and jigs, along with some specific procedures for making the many Dobsonian telescope parts.

Stay tuned for more on the indispensible router!

Don’t look too closely at this drill press photo, or you will notice the fence clamps before the knob addition.

SVAS ATM Connection

Nevada County Astronomers

Mirror Workshop

by Lonnie Robinson

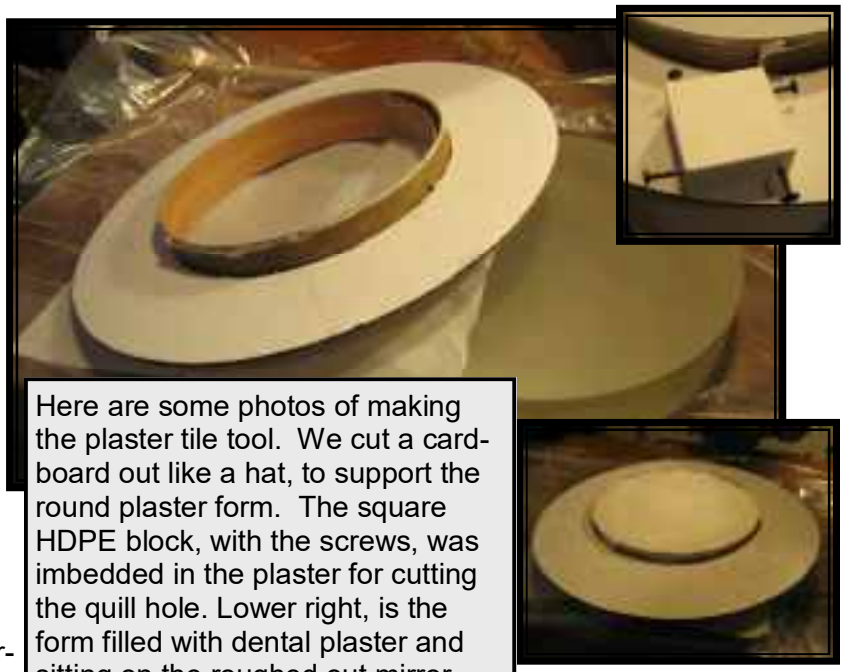
Making telescope Mirrors is really the PITS!

It really is about the pits, the big ones left behind from previous larger grades of abrasive. It's really tough to judge which ones are left over from previous grits, or caused by some random larger grains from the current abrasive. Some are borderline enough to be removed by the next grit, and some may not. It's true that you can catch up by simply grinding longer with a finer grade, but one must do their best to make sure all the largest pits are removed at each grinding sequence.

Before I tell the rest of the story, allow me to make an analogy of prepping an automobile fender for painting. When applying Bondo filler to a low spot or dent in a fender, the first sanding is done with 40 to 100 grit sandpaper attached to a long straight sanding block. This coarse grit paper cuts very fast, resists following any rippled or rough filler, and creates a very flat surface or perfect contour. If you used say 200 grit first, it would tend to follow and polish the rippled surface instead of cutting it flat. It's best to alternate sanding direction to contour the surface be it flat or curved, making sure no deep groves are created. After the accurate surface is created with 40-100 grit, then using progressively finer grits will remove larger sanding marks (unlike glass grinding, a filler must be used for the very coarse marks) until they are small enough to fill with a spray primer. If you make too large a jump in sandpaper grit, the smaller grits just can't remove large scratches. So it is with mirror grinding.

We use 60 to 80 grit silicon carbide (sc) for hogging out the curve, and 120, 220, and 280 sc to perfect the spherical shape. Unlike sandpaper, these grits roll between the glass and tool, chipping out minute chunks of glass leaving small pits behind. Just like contouring an auto fender, the spherical curve must be near perfect after 220sc or it will be very hard or impossible to correct with finer grits. Any zones or low areas created with coarser grits will probably remain throughout the finish grits, and any large leftover pits will still exist in the finishing process. After grinding with 280 grit silicone carbide, we use a softer and smoother cutting aluminum oxide (ao), 25m (380grit), 15m (600grit) and 9 Micron (900grit), to smooth and gradually reduce the larger pits while preparing for polish. If doing it by hand and not on a machine, I suggest a sequence of 25m, 12m, and 5m ao.

Paul and I have been faithfully inspecting the surface, after each grit session, with a 10X loupe magnifier. 10x doesn't seem like a lot of magnification, but the surface can look like our cratered Moon! It really brings out the larger pits, and we ground until no further improvement was evident. The problem is there are always some larger pits left over, evidently from larger grits present in the current abrasive. Notice how we slipped some rubber auto hose over the metal flashlight just in case it's dropped on the mirror! The little sponge at the bottom right efficiently collects the slurry off the HDPE turntable and drips it into the collection container.



Here are some photos of making the plaster tile tool. We cut a cardboard out like a hat, to support the round plaster form. The square HDPE block, with the screws, was imbedded in the plaster for cutting the quill hole. Lower right, is the form filled with dental plaster and sitting on the roughed out mirror.

We are now finishing up with 9 micron, with only a few more wets (grinding sessions) to go. The closer we got to the fine grits, the more tendency the tool had to stick to the mirror. Not good! The smooth surfaces create a suction like force that can lock the tool to the mirror surface and stop it in it's tracks. We had great success keeping the ao, mixed with water, at about 20% or more (the grit acts like little ball bearings and breaks up the surface tension), adding a maximum of a couple small drops of dish soap (too much soap seems to make things worse, thickening the residual slurry), keeping the surface wet with a water spritz (a couple drops of soap in there too), and keeping the channels of the tile tool open with a hacksaw blade. Last but not lease, making the wets shorter (20min each), cleaning up the pasty sticky slurry created with ground glass and used grit, kept the tool working smoothly!

Next comes making a 75% diameter pitch lap for fixed post polishing. We will position the lap on the previously determined sweet spot, that position which balances the grind maintaining a constant ROC. Turned down edge (tde) is always rearing it's ugly head, so we will position the lap with a bit less overhang. The polish progresses from the center out, so we can watch as it progresses to the edge. That way we can stop just as the polish is complete to the edge, hopefully preventing a tde. Some major causes of tde are; too soft a lap which expands down over the edge and cuts at the edge on the return path, too much tool overhang, too much downward pressure, and allowing the edge to dry out during polish (a couple drops of soap help here too). We want to maintain the ring of fire, indicating a good edge, the bright diffraction ring around the entire mirror circumference in the Foucault test. Using the Ronchi screen will show little hooks developing at the edge too, so frequent check-ups are in order during polish.

We will use the Carl Zambuto method of figuring (creating a parabola from the sphere), so several graduated smaller laps are needed to figure from the edge to the center. The idea is to use a lap diameter about 75% of size of the zone being altered. The standard method is deepening the center first, then working out to the edge. Either way, it's best to leave the more perfect edge, created by spherical grinding, alone as much as possible. Mirror quality is dictated by the outer portion of the mirror!

Seriously, think about making your own mirror. I would be happy to help, and Bill Thomas from NcA (Nevada County Astronomers) is there for you too. We have plenty of combined knowledge to help expertly make your own mirror, and Dobsonian telescope. Loads of patience and a small amount of skill are required, taking the extra time to perfect your mirror can result in equal or better than professional standards.

Stay tuned for polishing Paul's mirror.

M82 Supernova!

By Deborah Byrd

Science News
Great Photos
Sky Alerts

EarthSky

Reprinted with permission
earthsky.org

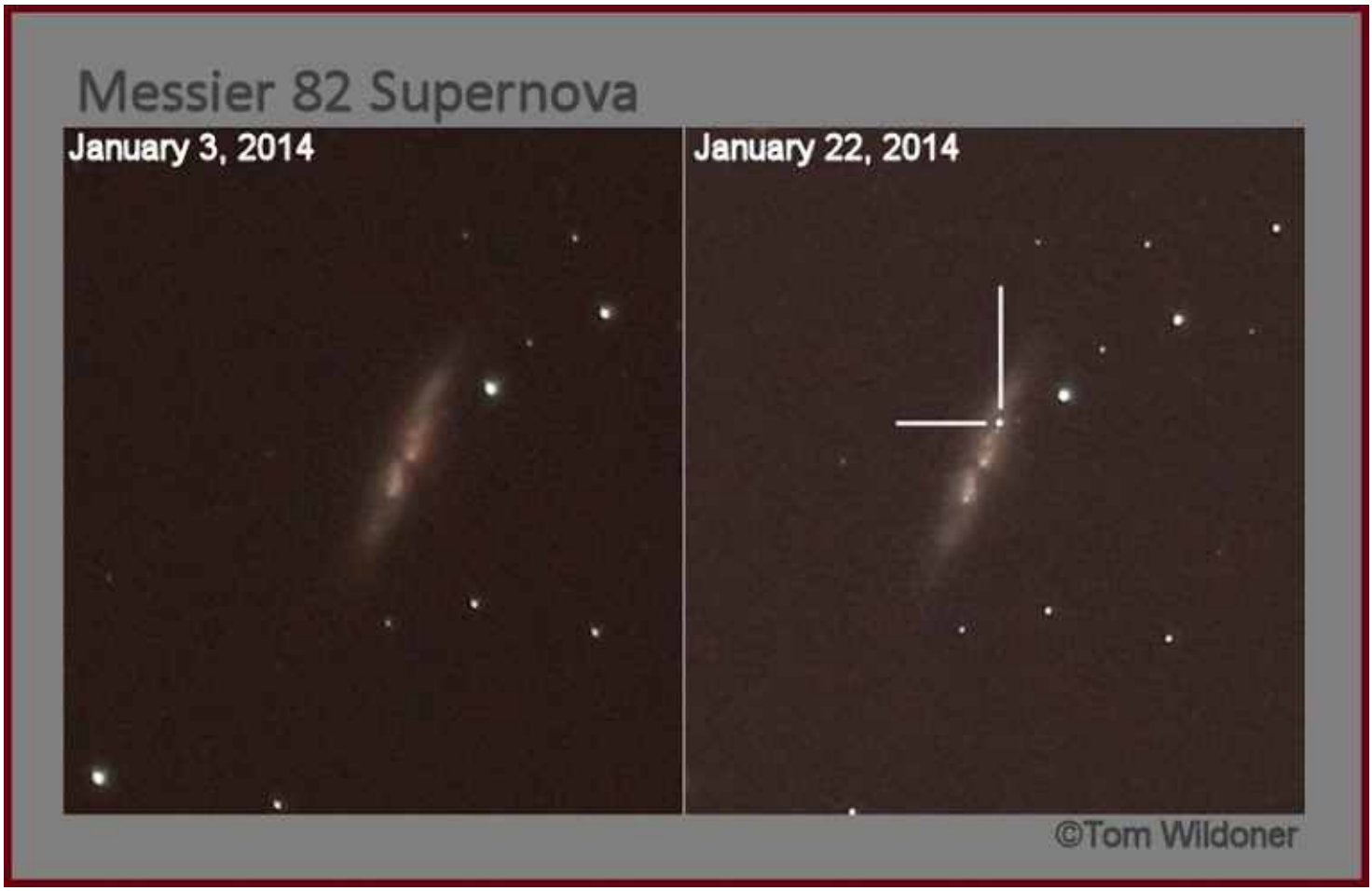
Photo by Thomas Wildoner

The closest supernova in years has erupted in the galaxy M82, only 11 or 12 million light-years away. Before-and-after images of the galaxy and its supernova here.

Amateur astronomers are capturing the first images of the supernova, or exploding star, in the famous galaxy Messier 82 (M82), which appears along our line of sight to the famous Big Dipper asterism. The first to recognize the supernova, it seems, was a team of students at the University College London Observatory, inside the London city limits, on January 21, 2014 (view press release). It is bright enough to be visible in small telescopes, and it's apparently still getting brighter. It's well placed for viewing in the evening hours.

Scott MacNeill at Frosty Drew Observatory, captured these before-and-after images of the galaxy M82 this month. The one on the right shows the supernova. Thank you, Scott!

M82 is a near neighbor in our vast universe of galaxies. This is the closest supernova in years, at 11 or 12 million light-years away. Hopefully, it goes without saying that there is no danger. Members of the EarthSky community captured the images below. Enjoy thinking about this vast explosion in space, which actually happened millions of years ago. We are only now seeing its light.



Thomas Wildoner captured these before-and-after images of M82. Again, the supernova is on the right. Thank you, Thomas! PHOTO DETAILS: 90 second exposures using a Canon T4i and Canon EF400mm f/5.6L USM lens at ISO 800. The camera was mounted on a ZEQ25GT mount from iOptron.

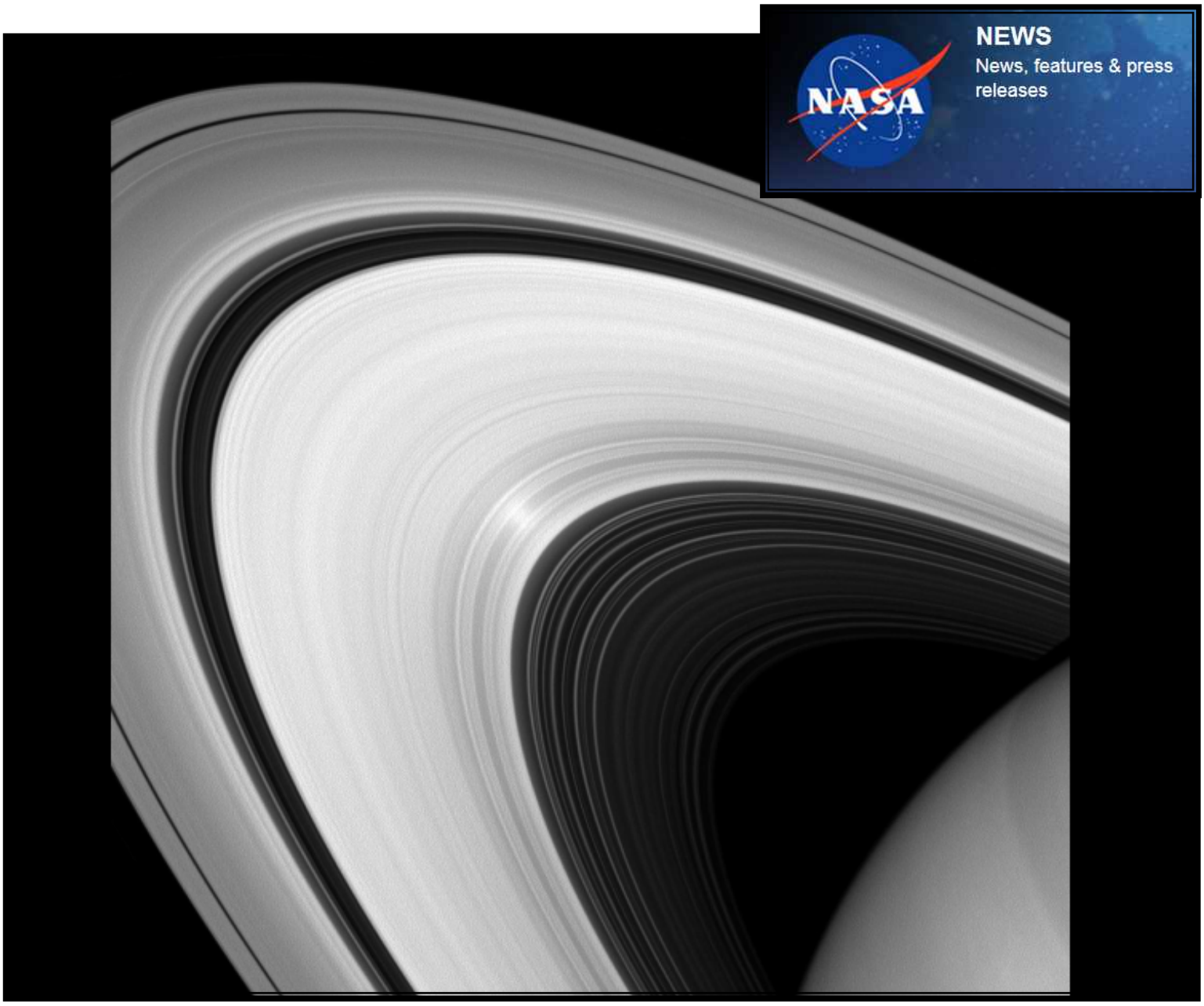
Some are saying this is the nearest supernova since Supernova 1987A in the Large Magellanic Cloud. However, there was another supernova, Supernova 1996J, in M81 some 20 years ago. The supernova's preliminary designation is PSN (Preliminary Supernova) J09554214+6940260. Expect a better name soon! Skyandtelescope.com reports:

A spectrum reported by Yi Cao and colleagues (Caltech) suggests that the supernova may still be two weeks away from reaching its peak brightness. The spectrum shows it to be a Type Ia supernova — an exploded white dwarf — with debris expanding at 20,000 kilometers per second. It is reddened, and hence must also be dimmed, by dust in M82 along our line of sight.

You need a telescope to see the supernova, so check with your local science or astronomy club. Some may be having impromptu star parties in its honor. M82 is well up in the northeastern sky by 7 or 8 p.m. (for observers at mid-northern latitudes). The waning gibbous moon doesn't rise until much later.

Editors note: I had the opportunity to see this M82 supernova tonight (Feb 21) through the 16" Meade at Sac City College. It is still quite bright, and could remain visible for many more weeks. It's hard to miss, it's the only bright star located in the galaxies central plane. Thank you astronomy professor Liam McDaid!

Majestic Saturn Through Cassini's Eye



Although it may look to our eyes like other images of the rings, this infrared image of Saturn's rings was taken with a special filter that will only admit light polarized in one direction. Scientists can use these images to learn more about the nature of the particles that make up Saturn's rings.

The bright spot in the rings is the "opposition surge" where the Sun-Ring-Spacecraft angle passes through zero degrees. Ring scientists can also use the size and magnitude of this bright spot to learn more about the surface properties of the ring particles.

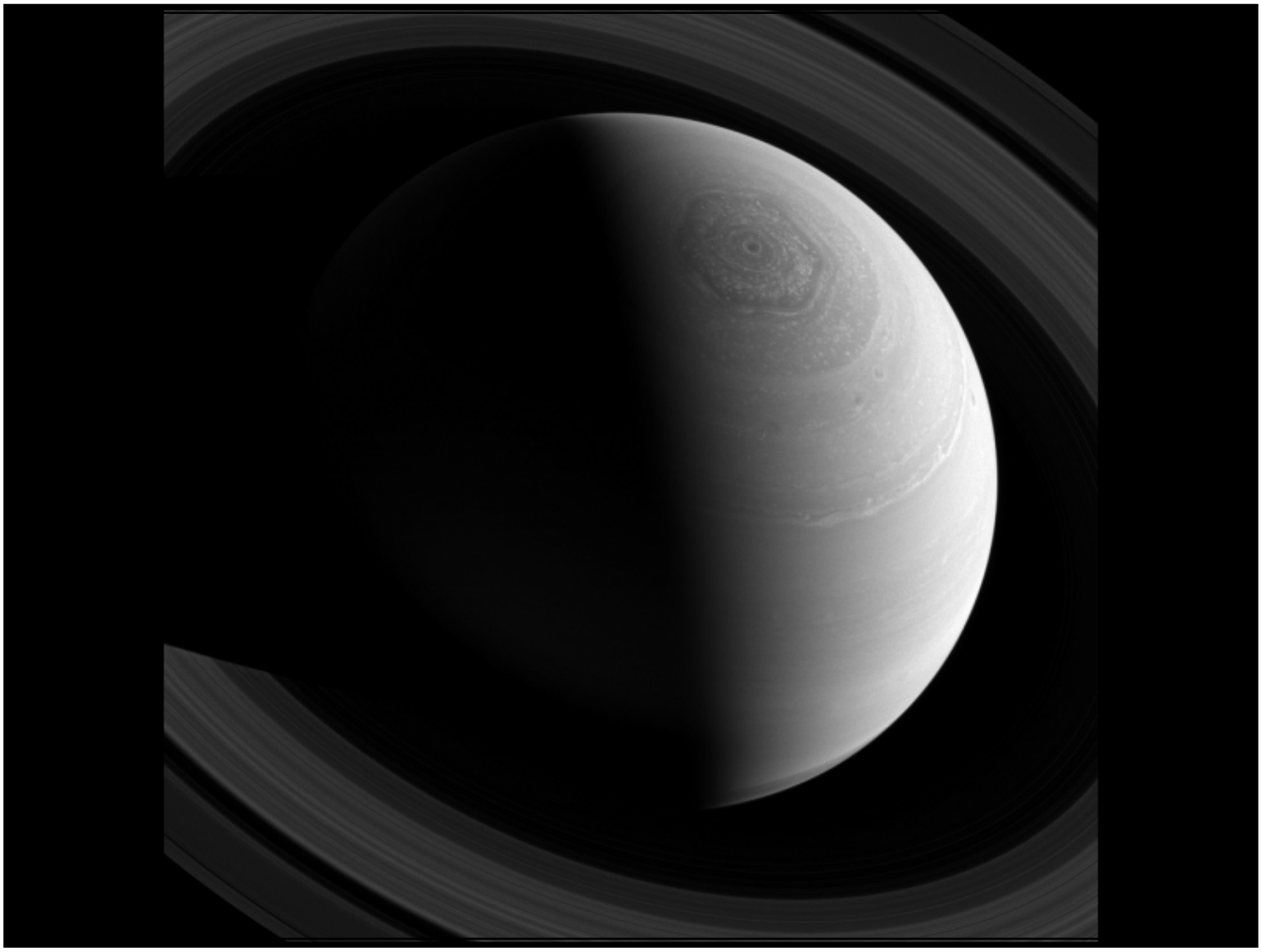
This view looks toward the sunlit side of the rings from about 19 degrees above the ringplane. The image was taken with the Cassini spacecraft wide-angle camera on Aug. 18, 2013 using a spectral filter sensitive to wavelengths of near-infrared light centered at 705 nanometers.

The view was acquired at a distance of approximately 712,000 miles (1.1 million kilometers) from Saturn and at a Sun-rings-spacecraft, or phase, angle of 7 degrees. Image scale is 43 miles (68 kilometers) per pixel.

For more information about the Cassini mission, visit www.nasa.gov/cassini.

Image Credit: NASA/JPL-Caltech/Space Science Institute

Cassini's View from 43 degrees above, and 1.6 million miles out.



Just as Saturn's famous hexagonal shaped jet stream encircles the planet's north pole, the rings encircle the planet, as seen from Cassini's position high above. Around and around everything goes!

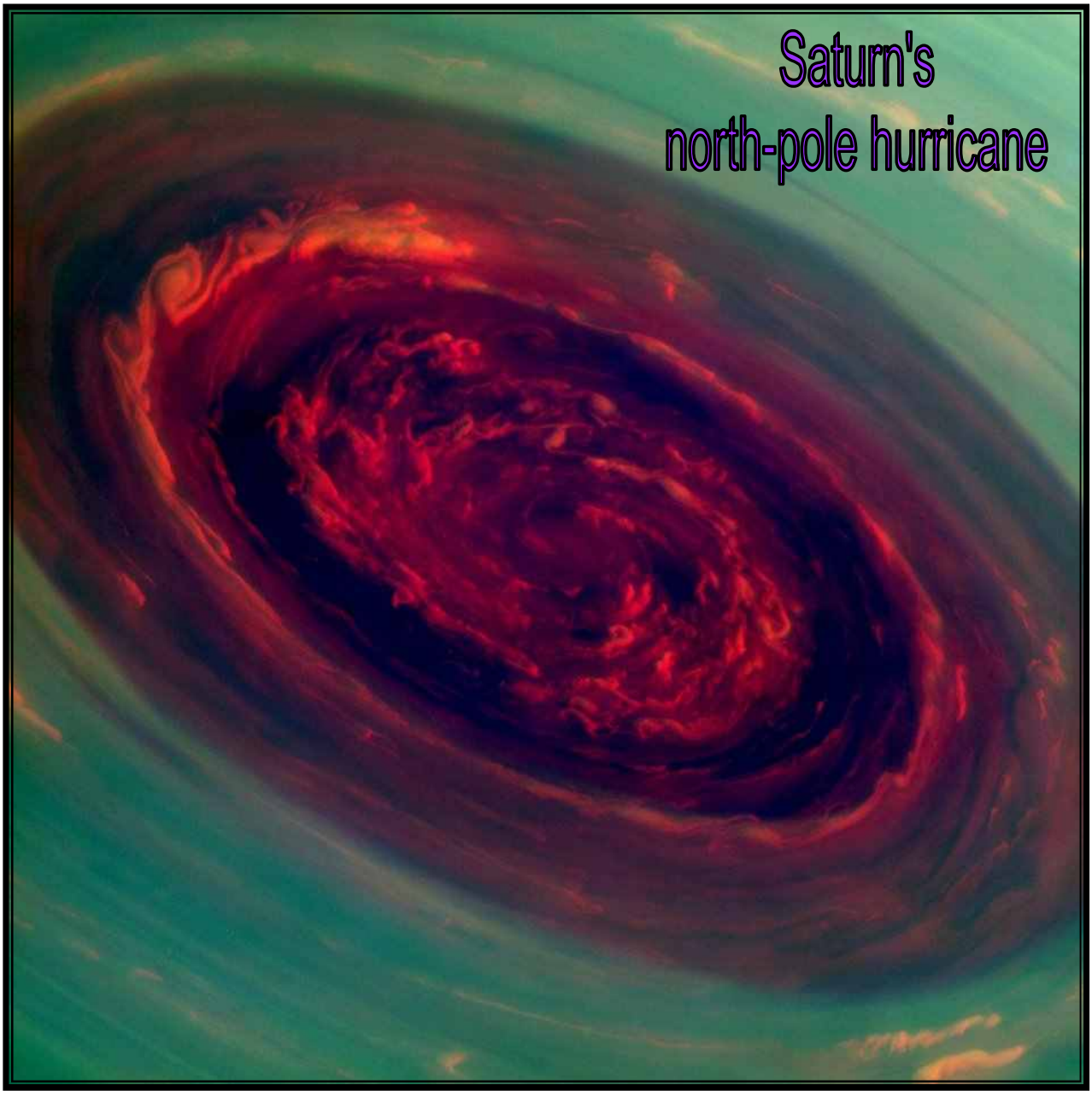
This view looks toward the sunlit side of the rings from about 43 degrees above the ringplane. The image was taken with the Cassini spacecraft wide-angle camera on Nov. 23, 2013 using a spectral filter that preferentially admits wavelengths of near-infrared light centered at 752 nanometers.

The view was obtained at a distance of approximately 1.6 million miles (2.5 million kilometers) from Saturn and at a Sun-Saturn-spacecraft, or phase, angle of 97 degrees. Image scale is 93 miles (150 kilometers) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colo.

For more information about the Cassini-Huygens mission, visit: http://Saturn.jpl.nasa.gov and http:// www.nasa.gov/cassini.

Image Credit: NASA/JPL-Caltech/Space Science Institute



Spectacular close-up view of Saturn's north-pole hurricane, as seen by the international Cassini spacecraft, revealing the intricate detail of cloud formations in this dynamic feature.

The images were captured by Cassini from a distance of about 419 000 km from Saturn on 27 November 2012, and are the first close-up views of this storm. Image scale is 2 kilometres per pixel.

The images were taken with the Cassini spacecraft narrow-angle camera using a combination of spectral filters sensitive to wavelengths of near-infrared light. The images filtered at 890 nanometres are projected as blue. The images filtered at 728 nanometres are projected as green, and images filtered at 752 nanometres are projected as red. In this scheme, red indicates low clouds and green indicates high ones.

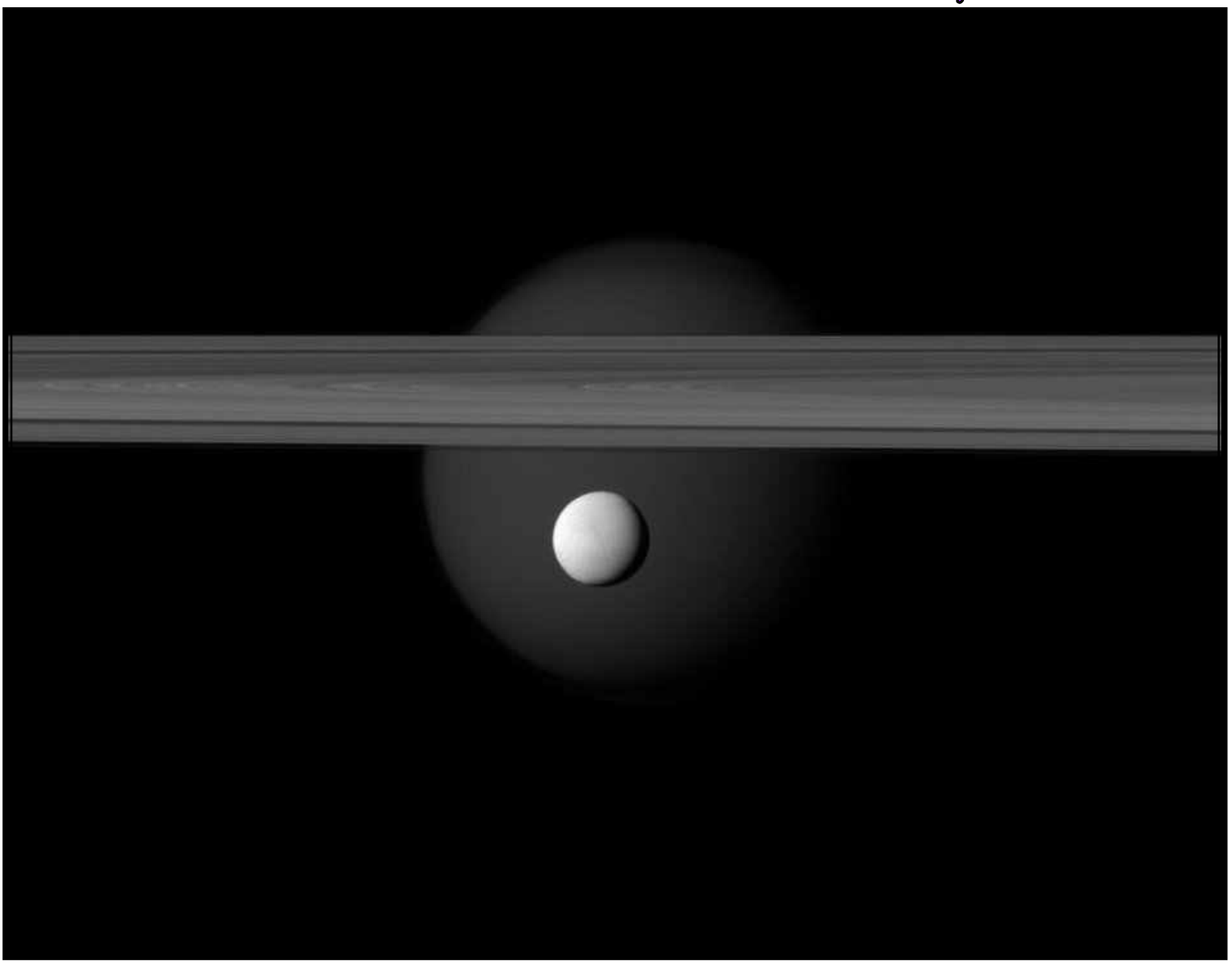
The eye of the hurricane spans about 2000 km and the clouds at the outer edge are travelling at 540 km/h.

The hurricane shares striking similarities to those seen on Earth: both have an eye with no clouds or very low clouds at the centre, high clouds forming an eyewall, with other high clouds spiraling around the eye, and an anticlockwise spin in the northern hemisphere.

Credits: NASA/JPL-Caltech/SSI

Enceladus suspended below Saturn's rings, with Titan keeping watch from behind!

This is a really "WOW" Photo!

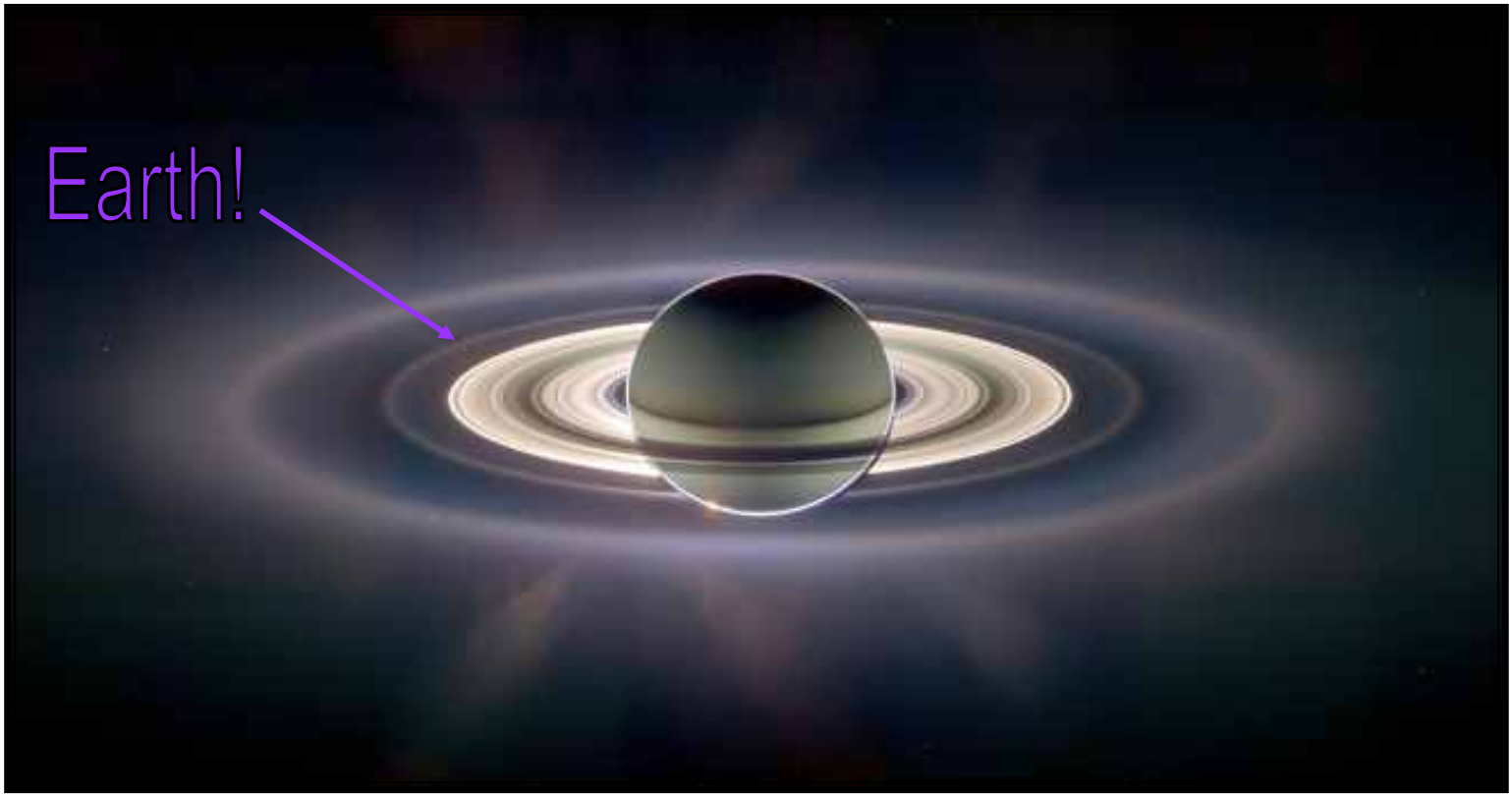


Saturn's icy moon Enceladus hangs below the gas giant's rings while Titan lurks in the background, in this new image taken by the Cassini spacecraft.

Faint detail of the tiger stripe markings can be seen on Enceladus' surface, which is framed against Titan, Saturn's largest moon. With jets of water ice and vapour streaming from Enceladus' south pole, and liquid hydrocarbon lakes pooling beneath Titan's thick atmosphere, these are two of Saturn's most enigmatic moons.

The northern, sun-lit side of Saturn's rings are seen from just above the ring plane in this image, which was taken in visible green light by Cassini's narrow-angle camera on 12 March while it was approximately one million kilometres from Enceladus. The image scale is six kilometres per pixel on Enceladus. *Credits:* NASA/JPL-Caltech/Space Science Institute

Saturn Eclipsing the Sun



In the Shadow of Saturn
Credit: CICLOPS, JPL, EAS, NASA

In the shadow of Saturn, unexpected wonders appear. The robotic Cassini spacecraft now orbiting Saturn recently drifted in giant planet's shadow for about 12 hours and looked back toward the eclipsed Sun. Cassini saw a view unlike any other. First, the night side of Saturn is seen to be partly lit by light reflected from its own majestic ring system. Next, the rings themselves appear dark when silhouetted against Saturn, but quite bright when viewed away from Saturn and slightly scattering sunlight, in the above exaggerated color image. Saturn's rings light up so much that new rings were discovered, although they are hard to see in the above image. Visible in spectacular detail, however, is Saturn's E ring, the ring created by the newly discovered ice-fountains of the moon Enceladus, and the outermost ring visible above. Far in the distance, visible on the image left just above the bright main rings, is the almost ignorable pale blue dot of Earth.

SVAS Officers 2013

President — Ross Gorman

Vice President — Walt Heiges

Secretary — Nerissa Adams

Treasurer — Kevin Normington

Past President — Liam McDaid

SVAS Board of Directors

Perry Preston Porter, Ramona Glasgow, Lonnie Robinson, Richard Sandler, Tim Tingey, Bill Marquardt

Committees

Membership	Ross Gorman / Nerissa Adams
Resources	Ross Gorman / Walt Heiges
Star-B-Q	Walt Heiges
Newsletter Editors	Lonnie Robinson / Walt Heiges
Speaker Seeker	Liam McDaid
SVAS Web Site	Margaret Minnick
Outreach Director	Walt Heiges / Perry P. Porter
Community Star Parties	Perry Preston Porter
Observatory Director	Perry Preston Porter
First Light Team	Perry Preston Porter
HGO Maintenance Director	Stuart Schulz
Telescope Loaner Program	Tim Tingey
Amateur Telescope Making	Lonnie Robinson / Bill Thomas

Where We Meet

General Meetings the third Friday of each month beginning at 8:00pm.
Board Meetings begin at 6:30 on the same day. All members are welcome.
Star Parties on weekends nearest the new Moon.

Sacramento City College
Mohr Hall Room 3
3835 Freeport Boulevard
Sacramento, CA.

WWW.SVAS.ORG

SVAS Observer

To Subscribe– First send in your membership application form below, with your dues, and upon approval by the Board of Directors the Observer newsletter (published bi-monthly beginning January) will be sent to your supplied email address in .pdf format. Second, request to join the SVAS Yahoo Group at http://groups-yahoo.com/group/svas-members. This group will keep you informed with the day to day current events and discussions.

Articles– Manuscripts and letters are welcome in MS Word, MS Publisher, or plain text format, and emailed to the SVAS Editor. Submission deadline is the 15th of the newsletter release month.

Advertising– Commercial, non-personal advertising, business card, and full page are available. Classified advertising is free to SVAS members.

SVAS Membership Application

Date___/ ___ /___ Membership (check one): New: ___ or Renew:___

Number of months until June (include June) #Months_____

For Student- (student ID req) multiply by $2 per month_____

Or for Family/ Individual– multiply by $3 per month_____

Observatory (+membership & approvals) multiply by $4 per month_____

Additional tax deductible contribution: Amt $ _____

July 1 is the annual renewal date Total Amount$_____

Name_____

Address_____

City _____ Zip_____ (Please Print)

Phone_____ (Email for newsletter mailing)

Email_____

Detach and mail with payment to: SVAS Membership Application, PO Box 15274, Sacramento, California. 95851-0274

Observatory Membership Approvals

The benefits of a regular membership plus private use of the Henry Grieb Observatory (HGO) at Blue Canyon. You must be a regular member for six months or longer, be certified and approved by the Observatory Director, and then be approved by the SVAS Board of Directors.

Note: It may take the SVAS Board of Directors 30 or more days to process and approve this application.

By signing this application, I acknowledge I have accessed the SVAS website, read and understand the SVAS bylaws and the rules governing the USFS Special Use Permit. In doing so, I agree to abide by the respective "terms and conditions" of each as they relate to the SVAS, use of its property and its facilities. I further understand and acknowledge that failure to abide by these "terms and conditions" can result in revocation of use privileges and/or SVAS membership.

Required Signature

_____

Date_____