

# PRIMEFOCUS

Tri-Valley Stargazers



May 2019



## Meeting Info

**What: Fixing Errors in the NGC/IC Catalogue**

**Who: Steve Gottlieb**

### When:

May 17, 2019

Doors open at 7:00 p.m.

Meeting at 7:30 p.m.

Lecture at 8:00 p.m.

### Where:

Unitarian Universalist  
Church in Livermore  
1893 N. Vasco Road

## Inside

News & Notes	2
Calendar of Events	2
TVS Successful Outreach	4
Member Astrophotos	5
What's Up	6
NASA Night Sky Notes	7
Membership/Renewal Application	8

## May Meeting

**NGC/IC Project: Cleaning up Errors in a 130 Year-Old Catalogue**

**By Steve Gottlieb**

Steve Gottlieb has been an active observer in the bay area for forty years. He is a contributing editor to Sky & Telescope magazine and often writes on advanced observing projects. He recently completed a project to visually observe the entire NGC (7840 objects) and his website Adventures in Deep Space ([www.astronomy-mall.com/Adventures.In.Deep.Space/](http://www.astronomy-mall.com/Adventures.In.Deep.Space/)) is a source of observing challenges for experienced amateurs.

For the past 25 years, Steve has been involved with a group of amateur and professional astronomers (The NGC/IC Project), who have re-examined the source material used to compile the NGC in 1888 and have produced a corrected NGC that reflects the original visual discoveries.

The NGC and IC objects were discovered over 100 years ago, but as many as 15 to 20% still have identification problems — poor positions, misidentifications, duplicate entries, incorrect classifications, and confusion with single or multiple stars. Their catalogue sleuthing has resulted in recovering hundreds of mistaken identities, lost objects, and solving contradictions in professional and amateur databases.

The NGC/IC Project's corrected database is now incorporated into several amateur software programs (SkySafari, StarryNight, TheSky, Voyager, Guide, SkyMap Pro, Cartes du Ciel, and more) as well as professional online databases such as NASA-IPAC Extragalactic Database, SIMBAD and HyperLeda. In this talk he'll discuss the history of the NGC and give several examples of their catalogue sleuthing.



Caption: Steve Gottlieb getting ready for another great night of observing deep-sky objects with his 24" f/3.7 Starstructure telescope.

## News & Notes

### 2019 TVS Meeting Dates

Below are the TVS meeting dates for 2019. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
May 17	May 20	
Jun. 21	Jun. 24	May 31
Jul. 19	Jul. 22	Jun. 28
Aug. 16	Aug. 19	Jul. 26
Sep. 20	Sep. 23	Aug. 30
Oct. 18	Oct. 21	Sep. 27
Nov. 15	Nov. 18	Oct. 25
Dec. 20	Dec. 23	Nov. 29

### Money Matters

As of the last Treasurer's Report on 4/17/19, our club's checking account balance is \$14,478.77.

### TVS Welcome to New Members

TVS would like to welcome new members Rahul Kaw, Ranjan Sinha, and Ryan and Rachel Steger. Please say hello and chat with them at upcoming club meetings.

### Outreach Star Parties

Friday, May 10: Valley Christian Elementary School; 8:00 set-up

Contact Eric Dueltgen if you are interested in participating (outreach"at"trivalleystargazers.org).

### 2019 Club Star Parties

Save the dates for the 2019 Club Star Parties.

Del Valle star parties are also public outreach events. They are jointly hosted with the EBRPD and held at the Arroyo Staging Area. The public is invited for the first 1.5-2 hours, while club members can stay the remainder of the night.

Tesla Vintners star parties are open to only club members and their guests. These star parties end at midnight, but participants can leave earlier, should they wish.

H2O star parties are open to the public. The open house ends at midnight, and all participants are encouraged to stay the duration. The drive to H2O takes about 1 hour, and the caravan leaves promptly from the corner of Mines and Tesla Rds.

May 25: H2O Open House, Caravan departs at 6:30pm

June 22: Tesla Vintners, set-up at 8:00pm

July 20: Tesla Vintners, set-up at 8:00pm

August 3: Del Valle (Arroyo Staging Area), set-up at 7:30pm

August 24: H2O Open House, Caravan departs at 6:00pm

September 21: Tesla Vintners, set-up at 6:30pm

October 5: Del Valle (Arroyo Staging Area), set-up at 6:00pm

### Club Star Party: H2O Open House-May 25

Saturday, 05/25/18: The H2O Open House is open to all club members and the public. Club members who need to complete their first time orientation as keyholders are encouraged to attend. The caravan to H2O departs promptly at 6:30pm from the corner of Mines and Tesla Roads. Admission is \$3/car (bring exact amount). Bring your own beverages (no alcohol) and pre-cooked food (no open flames or BBQ's). Services: Two Pit toilets. For updates check: [www.trivalleystargazers.org/](http://www.trivalleystargazers.org/) and for more site information see: [www.trivalleystargazers.org/h2o.shtml](http://www.trivalleystargazers.org/h2o.shtml)

### CalStar Events and Golden State Star Party Registration

The CalStar Star Party will be held on September 25-28. The location is only 3 hours away at Lake San Antonio in southern Monterey County. CalStar is a loosely organized party with no registration and no structure held at the County park. Just show up and pay the camping fee and join the group of about 100 star gazers in a section of the park reserved for us. For more information see: <https://calstar.observers.org/>

The Golden Star Star Party will be held over four nights on June 29-July 2 (departure (July 3) near Aiden, CA. Early Registration online is \$60 through March 30, \$70 thereafter, or \$75 onsite. If you do not plan on spending 4 nights, registration is \$25/night. For additional fees you can feast at the BBQ's on Sunday and Monday nights, and there is a free pancake breakfast on July 2. Attendance is typically 300-400 people. For more informations see: <http://goldenstatestarparty.org/> and TVS member Curtis Macchioni's presentation on GSSP can be found at: <http://www.trivalleystargazers.org/pdfs/GSSP.pdf>

## Calendar of Events

### May 11, 8:00pm

What: The Largest 3D Maps of Our Universe

Who: Dr. Josh Dillon, Postdoctoral FResearcher, UC Berkeley

Where: Mt. Tamalpais State Park, Cushing Memorial Amphitheater, more commonly known as the Mountain Theater, Rock Spring parking area

Cost: Free

The last century has seen a revolution in our understanding of the cosmos, including its age—13.8 billion years—and content: 95% dark matter & dark energy; 5% normal matter! To test cosmology theories and to grasp how stars and galaxies formed, UC Berkeley collaborates world-wide to make huge

Header Image: Folks attending the Boy Scout event at the Bankhead Theater at which TVS had a booth. Credit: Jenny Siders

## Calendar of Events (continued)

3D maps of hydrogen, the most abundant cosmic element.

For more information see: <http://www.friendsofmonttam.org/astronomy/schedule>

### May 15, 7:00pm

**What:** Charon, Pluto's Companion: What We're Learning from New Horizons

**Who:** Dr. Ross Beyer, SETI Institute

**Where:** Foothill College, Smithwick Theatre, 12345 El Monte Road, Los Altos Hills, CA 94022

**Cost:** Free, \$3 parking (Credit Cards or \$1 dollar bills)

Pluto's large moon Charon turned out to be far more interesting than astronomers expected. Pluto was the star of the New Horizons show, but the features on Charon's surface tell a fascinating tale of how icy worlds could form far from the gravitational influences of the giant planets. There is evidence of a world-wide sub-surface ocean early on, and of global expansion as that ocean froze solid. Charon's surface also has a region of plains where icy materials may once have flowed and smoothed over the fractures present elsewhere on its surface. Dr. Beyer will be your guide through this story of formation and change in the frozen reaches of the outer Solar System.

For more information see: <https://foothill.edu/astronomy/> or phone 650-949-7888.

### May 18, 11:00am

**What:** Human Caused Climate Change in US National Parks

**Who:** Prof. Patrick Gonzalez, UC Berkeley

**Where:** UC Berkeley, Genetics and Plant Biology Building, Room 100 (northwest corner of campus)

**Cost:** Free, limited hourly pay parking on/nearby campus. The venue is within walking distance of BART and bus lines.

From wildfires burning in Yosemite National Park, California, to glaciers melting in Glacier Bay National Park, Alaska, published scientific research has detected changes in United States national parks and attributed them to human-caused climate change. Since 1895, climate change has exposed the national parks to twice the heating of the country as a whole and to more severe aridity. Without cuts to pollution from cars, power plants, deforestation, and other human sources, continued climate change threatens the unique ecosystems, plants, and animals in parks. Meeting the Paris Agreement goal could lower projected heating by two-thirds, reducing risks of severe wildfire, disappearances of plants and animals, and other threats to our national parks.

For more information see: <http://scienceatcal.berkeley.edu/the-sciencecal-lecture-series/>

### May 18, 7:00pm-9:00pm

**What:** Your Place in the Universe: Understanding Our Big, Messy Existence

**Who:** Dr. Paul Sutter

**Where:** Houge Park, 3972 Twilight Drive, San Jose, CA

**Cost:** Free

Our universe changes every day. It was different in the past, and it will be different in the future. This is something we just learned about a hundred years ago, and we're still wrestling with the implications. Including, but not limited to, the fact that someday no more stars will shine.

Paul's new book, "Your Place in the Universe " will be avail-

continued on p.4

#### Officers

##### **President:**

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##### **Vice-President:**

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##### **Secretary:**

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##### **Past President:**

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#### Volunteer Positions

##### **Astronomical League Rep.:**

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##### **Club Star Party Coordinator:**

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##### **Refreshment Coordinator:**

Laurie Grefsheim

##### **Webmaster:**

Hilary Jones  
webmaster@trivalleystargazers.org

##### **Web & E-mail**

www.trivalleystargazers.org  
info@trivalleystargazers.org

##### **TVS E-Group**

To join the TVS e-group just send an e-mail message to the TVS e-mail address (info@trivalleystargazers.org) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

## Calendar of Events (continued)

able for purchase at the event for \$25 per copy and he will also be signing copies!

For more information see: <https://www.meetup.com/SJ-Astronomy/events/261129419/>

### June 3, 7:30pm

**What:** Mining the Sky: Discovering the Unexpected  
**Who:** Tony Tyson, University of California, Davis  
**Where:** California Academy of Sciences, 55 Music Concourse Dr., Golden Gate Park, San Francisco, CA  
**Cost:** Advanced ticketing required. Academy members \$12, Seniors \$12, General \$15. Reserve a space online or call 1-877-227-1831.

Fueled by advances in software, computation, microelectronics, and large optics fabrication, a novel type of sky survey will begin in 2022. In a rapid campaign of 30 second exposures, the Large Synoptic Survey Telescope will cover the southern sky deeply for ten years, opening a movie-like window on objects that change or move on rapid timescales. The deep images from the LSST will chart billions of remote galaxies in 4-D, providing multiple interlocking probes of the mysterious Dark Matter and Dark Energy. In a high dimensional database, hundreds of petabytes will be mined for the unexpected.

See [www.calacademy.org/events/benjamin-dean-astronomy-lectures](http://www.calacademy.org/events/benjamin-dean-astronomy-lectures) for lecture and reservation information.

### June 8, 8:00pm

**What:** Gravitational Lensing: Bends in Spacetime  
**Who:** Fatima Abdurrahman, Doctoral Candidate, Astronomy Department, UC Berkeley  
**Where:** Mt. Tamalpais State Park, Cushing Memorial Amphitheater, more commonly known as the Mountain Theater, Rock Spring parking area  
**Cost:** Free.

100 years ago, Einstein predicted that light rays would deviate from straight-line paths in the space near massive objects. Today, we use this fact to weigh galaxies, discover planets of other stars, and “see” invisible black holes. How did this idea of gravitational lensing come about, and how do we use it today to probe all fields of astrophysics?

For more information see: <http://www.friendsofmontam.org/astronomy/schedule>

### June 15, 6:00pm - 9:30pm

**What:** Adult Hike and Sip: Cultural Tales of the Night Sky  
**Who:** You and Chabot Staff  
**Where:** Chabot Space and Science Center, 10000 Skyline Blvd., Oakland, CA 94619  
**Cost:** Advanced Registration Required: \$27 Members, \$30 General Public

The journey begins at sunset from the Center into the beauti-

ful surrounding redwood forest. We'll hike along some of the most popular trails and learn about local history as we uncover evidence from early settlers and will examine local plants as we discuss the ecology of the forest. At sunset, we'll stop to observe the first of the night's visible stars and planets and discuss cultural stories related to the night's sky. Upon return, each hiker will receive two complimentary glasses of wine or beer along with small bites. A perfect evening for a date night or fun with friends!

Capacity is limited, and the hike is ~4-5 miles round trip.

For more information see: <https://chabot.space.org/events/events-listing/> or for more information, call (510) 336-7373.

## TVS: Successful Outreach

Club outreach takes many forms, including inviting guest speakers to our monthly meetings, as well as outreach star parties that are held at schools, community centers, libraries, Del Valle, H2O, and Yosemite National Park.



Caption: Last month's speaker, Retired Astronaut Dr. James Newman, gave generously of his time after his featured presentation to chat with club members and guests, including Siyul Lee. Image Credit: Ji-woo Lee.

## TVS: Outreach (continued)



Caption: Club member Ross Gaunt staffs the TVS booth at the Boy Scouts Astronomy Event at the Livermore Bankhead Theater on May 1, 2019. Image Credit : Jenny Siders

Last month's TVS meeting was well-attended with Dr. James Newman speaking about his experiences as a NASA astronaut. Flying on the Space Shuttle 4 times, he participated in servicing mission of the Hubble Space Telescope, and on 2 missions he helped build the International Space Station (ISS). He was generous with his time in fielding questions for more than an hour after his featured presentation ended (see image on p.4).

On May 1, TVS had an outreach booth at the Bankhead Theater as part of an event hosted by the Twin Valley District of the San Francisco Bay Area Council Boy Scouts of America (see image above and the header image on p.1). At this event, "Destination Space Station Beyond," former astronauts Tammy Jernigan and Jeff Wisoff, who now work at Lawrence Livermore National Laboratory, spoke of their participation in the building of the ISS and what it was like to conduct a spacewalk and live in space.

Thanks go to the club members who have given of their time to make these and other outreach events successful, including Eric Dueltgen (TVS Outreach Coordinator), Roland Albers, Dan Bergmann, Aadi Duggal, Ross Gaunt, Fletcher Goldin, Mike Haugh, Scott Jacobson, Mike Roth, and Jenny Siders. Unfortunately, the names of some volunteers are missing, as Eric did not have an email record that they were going to participate-Thank you all!

## TVS Member Astrophotos



Caption: While near Santa Barbara to image a SpaceX launch from Vandenberg Air Force Base, TVS member Chris Kitting imaged the remnants of a fireball that graced the California skies last September 15. This image was obtained using a Canon T2i, with a 50mm equivalent lens, thus the view is equivalent to what one would have seen with the unaided eye! Image: copyright-Chris Kitting.

## What's Up By Ken Sperber (adapted from S&T and The Year in Space)

All times are Pacific Daylight Time

### May

- 10 Fri The Moon is near the Beehive Cluster (M44) in Cancer (Evening)
- 11 Sat **First-Quarter Moon is located near Regulus (5:12pm)**
- 15 Wed The Moon is about  $8^{\circ}$  above Spica (Dusk)
- 18 Sat **Full Moon (2:11pm)**
- 19 Sun The Moon forms a triangle with Jupiter and Antares (All Night)
- 20- Mon- On the 20th the Moon is about  $5^{\circ}$  right of Jupiter. Over the next 3 mornings the Moon approaches and overtakes Saturn, ending about  $5^{\circ}$  left of Saturn
- 26 Sun **Last-Quarter Moon (8:34am)**
- 28 Tue Asteroid 1 Ceres at opposition. Visible in binoculars on the border of Scorpius and Ophiuchus (All Night)

### June

- 1 Sat Venus and the crescent Moon rise in the east, less than  $6^{\circ}$  apart (Dawn)
- 3 Mon **New Moon (3:03am)**
- 4 Tue The 1-day old Moon sets in the west-northwest, with Mercury  $6^{\circ}$  to its right (Dusk)
- 6 Thu The Moon is about  $4^{\circ}$  from the Beehive Cluster (M44) in Cancer (Evening)
- 09 Sun **First-Quarter Moon (10:59pm)**
- 10 Mon Jupiter at opposition (All Night)
- 15-16 Sat- On the 15th the Moon, Jupiter, and Antares form a triangle in the southwest. They appear as an arc on the 16th (Night)
- 17 Mon **Full Moon (1:31am)**
- 17-18 Mon- Mercury and Mars are  $<0.5^{\circ}$  apart in the west-northwest just after sunset. They are  $<2^{\circ}$  apart a couple of nights before and after (Evening)
- 18 Tue The Moon and Saturn rise together, being about  $1^{\circ}$  apart (Evening)
- 21 Fri The summer solstice arrives (8:54am); shortest night of the year in the Northern Hemisphere
- 25 Tue **Last-Quarter Moon (2:46am)**
- 30 Sun Directly below the Pleiades (M45), the Moon is near the Hyades in Taurus (Dawn)

# NASA Night Sky Notes

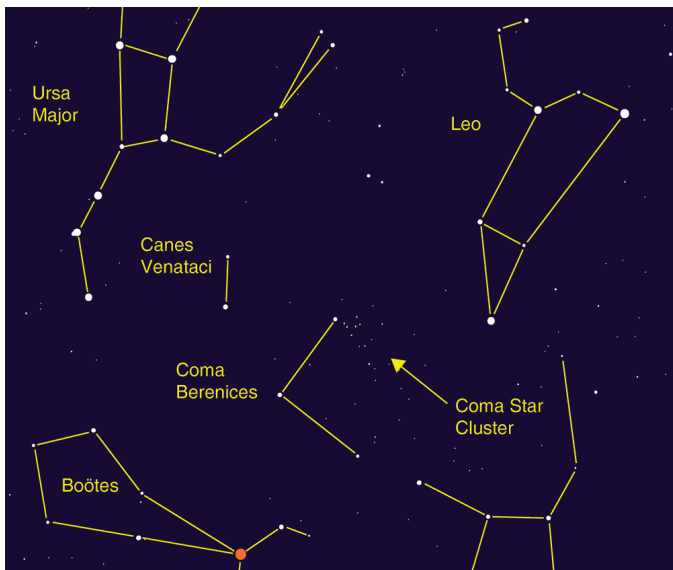
## Mars the Wanderer

By David Prosper

Late spring brings warmer nights, making it more comfortable to observe a good showing of the Eta Aquarids meteor shower. Skywatchers can also look for the delicate Coma Star Cluster, and spot the Moon on the anniversary of Apollo 10's "test run" prior to the Moon landing in 1969.



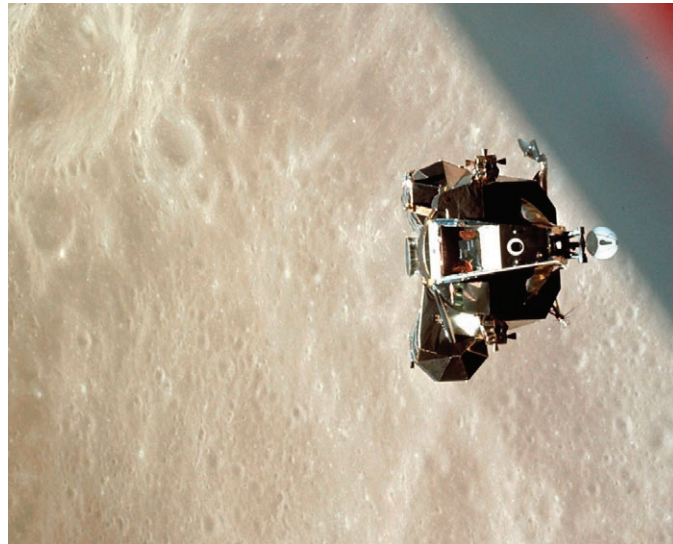
The Eta Aquarids meteor shower should make a good showing this year, peaking the morning of May 6. This meteor shower has an unusual "soft peak," meaning that many meteors can be spotted several days before and after the 6th; many may find it convenient to schedule meteor watching for the weekend, a night or two before the peak. You may be able to spot a couple dozen meteors an hour from areas with clear dark skies. Meteors can appear in any part of the sky and you don't need any special equipment to view them; just find an area away from lights, lie down on a comfy lawn chair or blanket, relax, and patiently look up. These brief bright streaks are caused by Earth moving through the stream of fine dust particles left by the passage of Comet Halley. While we have to wait another 43 years for the famous comet grace our skies once more, we are treated to this beautiful cosmic postcard every year.



Caption: Try to spot the Coma Star Cluster! Image created with assistance from Stellarium

While you're up meteor watching, try to find a delightful naked eye star cluster: the Coma Star Cluster (aka Melotte

111) in the small constellation of Coma Berenices. It can be spotted after sunset in the east and for almost the entire night during the month of May. Look for it inside the area of the sky roughly framed between the constellations of Leo, Boötes, and Ursa Major. The cluster's sparkly members are also known as "Berenice's Hair" in honor of Egyptian Queen Berenices II's sacrifice of her lovely tresses. Binoculars will bring out even more stars in this large young cluster.



Caption: A view of Apollo 10's Lunar Module from the Command Module as it returned from maneuvers above the lunar surface. Photo Credit: NASA. Source: <http://bit.ly/apollo10view>

May marks the 50th anniversary of the Lunar Module's test run by the Apollo 10 mission! On May 22, 1969, NASA astronauts Thomas Safford and Eugene Cernan piloted the Lunar Module - nicknamed "Snoopy" - on a test descent towards the lunar surface. Undocking from "Charlie Brown" - the Command Module, piloted by John Young - they descended to 47,400 feet above the surface of the Moon before returning safely to the orbiting Command Module. Their success paved the way for the first humans to land on the Moon later that year with Apollo 11. Look for the Moon on the morning of May 22, before or after dawn, and contemplate what it must have felt like to hover mere miles above the lunar surface. You'll also see the bright giant planets Saturn and Jupiter on either side of the Moon before sunrise. When will humans travel to those distant worlds?

You can catch up on all of NASA's current and future missions at [nasa.gov](http://nasa.gov)

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov) to find local clubs, events, stargazing info and more.



Tri-Valley Stargazers  
P.O. Box 2476  
Livermore, CA 94551  
[www.trivalleystargazers.org](http://www.trivalleystargazers.org)

## Tri-Valley Stargazers Membership Application

### Contact information:

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Email Address: \_\_\_\_\_

Status (select one):  New member  Renewing or returning member

**Membership category** (select one): Membership term is for one calendar year, January through December.

Student member (\$5). Must be a full-time high-school or college student.

Regular member (\$30).

Patron member (\$100). Patron membership grants use of the club's 17.5" reflector at H2O. You must be a member in good standing for at least one year, hold a key to H2O, and receive board approval.

**Hidden Hill Observatory Access** (optional):

One-time key deposit (\$20). This is a refundable deposit for a key to H2O. New key holders must first hear an orientation lecture and sign a usage agreement form before using the observing site.

Annual access fee (\$10). You must also be a key holder to access the site.

**Donation** (optional) :

Tax-deductible contribution to Tri-Valley Stargazers

**Total enclosed:** \$ \_\_\_\_\_

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function. TVS will not share information with anyone except as detailed in our Privacy Policy ([www.trivalleystargazers.org/privacy.shtml](http://www.trivalleystargazers.org/privacy.shtml)).

Mail this completed form along with a check to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551.