

THE EVENT HORIZON



ST. LOUIS ASTRONOMICAL SOCIETY

*Devoted to the Interest and Advancement
of the Science of Astronomy*

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Planetary Climates

by

**Dr. Ray Arvidson
Earth and Planetary Sciences
Washington University**

Dr. Ray Arvidson will be the speaker at the April meeting. It will be a Zoom meeting.

Directions for viewing are on Page 2.

Venus, Earth, and Mars, the terrestrial planets, provide rather divergent examples of climatic evolution. Venus, with its dense carbon dioxide atmosphere, and consequent runaway greenhouse, has incredibly hot surface temperatures. Perhaps Venus never had oceans to absorb the carbon dioxide and make carbonate rocks such as limestone. Earth, on the other hand, is in the “habitable zone” with the right mix of volcanic gas emissions and solar radiation that keeps us on average above freezing, including sequestration of carbon dioxide in the marine rock record. Mars, based on orbital and landed data (particularly from Curiosity’s observations), once had the right combination of volcanic emissions and solar radiation to keep the surface above freezing. However, this climatic regime only existed early in geologic time. We will explore what keeps a planet warm and wet, thus suitable for life, and what we expect to happen to Earth’s climate over the next century.

Raymond Arvidson received a Ph.D. from Brown University in 1974. He is presently the James S. McDonnell Distinguished University Professor Washington University in St. Louis, where he focuses on teaching and research about current and past environments on the Earth, Mars, and Venus. He is a fellow of the McDonnell Center for the Space Sciences. He has been instrumental in development and implementation of both orbital and landed missions to the planets, including participation in the Magellan Radar Orbiter Mission to Venus,

Team Leader for the Viking Lander Imaging System on Mars, member of the Project Science Group for the Mars Global Surveyor Mission, Deputy Principal Investigator for the highly successful Mars Rover Missions (Spirit and Opportunity), the Robotic Arm Investigator for the Mars Phoenix Lander Mission, Co-Investigator for the hyper-spectral mappers OMEGA (Mars Express orbiter) and CRISM (Mars Reconnaissance Orbiter), and a Science Team Member for the Mars Science Laboratory Curiosity Rover that landed on Mars in August 2012. He is the Director of the NASA Planetary Data System Geosciences Node, making available ~300 terabytes of NASA data to the worldwide research community. He is a Fellow of the Geological Society of America and the American Geophysical Union (AGU), received the AGU Whipple Award, and has been honored by the state of Missouri for excellence in teaching. He has received three NASA Public Service Medals, several dozen NASA citations for excellence, and is the winner of the 2016 Lester Stroud Award from the Society of Applied Spectroscopy. He has received several awards from Washington University in Saint Louis for research and teaching excellence, including the 2018 Weidenbaum Medal. Arvidson has over 250 publications and has participated in numerous National Research Council and NASA panels and committees during the past several decades.

Upcoming Meetings!

May William McKinnon, PhD Something about Ultima Thule of Course! - Washington University

June Vayujeet Gokhale, PhD The Science of Light Pollution Truman State University

July Amy E Kimball, PhD Radio Quasars & the VLA National Radio Astronomy Observatory (Zoom)

August Jeffrey Gillis-Davis, PhD Apollo XIII Plus 50 Years Washington University

October Marco Cavaglia, PhD Gravitational Waves Part II University of Missouri: S & T

Mid States Region



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President's Corner

by
Jim Small

The SLAS Regular meetings for April and May will be via Zoom conference only. This month features our longtime friend

To join the meetings, see the article on this page for instructions and a link. We had 47 attendees last month and I anticipate even more this month!

Due to COVID-19, **all outreach activities for April and May will likely be cancelled.** However, watch the calendar for virtual events to pop up! This past week, former ASEM member Stephen Hummel hosted a live viewing program direct from McDonald Observatory in west Texas! Bill Breeden has done a great job of hosing local virtual stargazing sessions. I will be hosting a program on using sky apps on Wednesday.

MSRAL and ALCON for 2020 are both postponed until 2021. Both will be hosted by the same organizations that were to host this year.

We will also be holding the SLAS Board meetings via Zoom conference, especially since at this writing, restaurants will be closing down for the near future.

So perhaps you are looking for a replacement for the MSRAL and/or ALCON conferences that you will now miss for the year. If you normally attend dark sky parties, chances are those have been cancelled as well. Let me offer you some opportunities that might be of interest to you.

The first opportunity if you really have an intense interest in cutting edge astronomy is the American Astronomical Society (AAS) meeting to be held June 1-3. This conference

is completely virtual so you won't have to pay for travel, hotel rooms, or meals! Amateur astronomers may register for the full conference for \$209 and attend all meetings. Students may register for \$99. There are many high power speakers and this conference will have many opportunities to see what's happening in the world of astronomy.

Here is the link for prices and registration page
<https://aas.org/meetings/aas236/register>

Here is a description for the meeting along with the schedule: <https://aas.org/meetings/aas236>

Other opportunities to see speakers and attend workshops also exist. Woodland Hills at Telescopes.net hosted a plethora of workshops last weekend. Astrophotographers such as Adam Block and Christopher Go gave full workshops on doing astrophotography. In addition a number of speakers gave talks. Here's a link to all. You don't have to subscribe to YouTube to view them.

<https://telescopes.net/store/free-virtual-event-astrophotography-youtube-live-lectures/>

NEAF (Northeast Astronomy Forum) also went virtual with a good lineup of speakers. There were also plenty of discounts by vendors. To view those talks, click here.

https://www.youtube.com/watch?v=6JgTLO1zPI8&feature=emb_rel_end

Here is a link to the full portal to see the offers by vendors:

<https://www.neafexpo.com/virtual-portal>

Hope this is enough to peak your interest in astronomy for the time being. BUT don't forget to get out and do some observing!

Jim Small

Nominations this Month for Elections to be Held at the May Meeting

At the meeting this month via Zoom, we will accept nominations for the board for elections to be held at the May meeting. Offices up for election include President, Vice President, Treasurer, Secretary, Hospitality, and the Board Member at Large position currently held by Tom Nickelson. Nominations will be honored at this month's meeting and anytime up until the elections are held at the May meeting. If you would like to nominate someone but aren't at the meeting, simply contact any board member to register your nomination before the election. Currently, all board members up for reelection are fine with being nominated for the slate for the next election.

Joining a Zoom Conference Meeting: Everyone can join!

Joining us for a Zoom Conference is easy! All you need is any of the following: Computer, desktop or laptop, smartphone, **OR** any regular phone!

The meeting will be open from 7-11pm.

Below is the invitation to join:

To join Zoom Meeting for SLAS Regular Meeting with computer or smartphone:

Just click the link below

<https://zoom.us/j/8604505790>

Meeting ID: 860 450 5790

Dial by phone using your location (any phone will work)

+1 312 626 6799 US (Chicago)

Meeting ID: 860 450 5790

If you need help joining the meeting, don't hesitate to call Jim Small at 314-307-0692!!

MSRAL 2020 and ALCON 2020 Postponed Until 2021 **by Jim Small**

As the rep for the Mid-States region I received this communication regarding the Astronomical League National Convention or ALCON from the AL. I also want to communicate that the MSRAL committee for the 2020 convention had already decided to postpone MSRAL until 2021 and that the current host will host the convention next year. There will be a business meeting via Zoom for the Mid-States Region on Saturday, May 16 at 10:00 am. If you wish to attend the business meeting, a message will be sent out via the Night Sky Network before the meeting.

Here is the communication from the Astronomical League:

From Chuck Allen, AL Secretary:

League president, Ron Kramer, has asked me to communicate to each of you an Executive Committee decision regarding scheduled or anticipated group activities at the regional level.

Due to the ongoing COVID-19 crisis, the Executive Committee has decided to suspend all League national and regional conventions and group activities until such time as competent medical and government authority determines that large public gatherings and public transportation and travel are safe. Until that time, no region or other entity acting under the League's aegis may conduct conventions, star parties, or other large public gatherings or group activities. Please understand that any person(s) violating this determination could be held personally liable to the League for any loss sustained by the League as a result.

Consistent with this determination regarding regional activities, the League has postponed its national convention for one year, until August 4-7, 2021. Our ALCon '20 hosts at The Albuquerque Astronomical Society have generously agreed to host ALCon '21 in Albuquerque at the same Embassy Suites venue. Steps are being taken to refund registrations received for this year's event.

Most League services will continue during this crisis.

All 2020 League awards programs will move forward on schedule with winners announced and recognized in Reflector, but the public presentation of 2020 awards (including League-sponsored youth award convention trips) will be deferred until ALCon '21. We encourage all regions to continue with their awards programs as well in that these can be conducted and announced without public gatherings.

All League Observing programs will continue as well, but we encourage individuals pursuing our observing programs to abide by national and local government orders relating to lock-downs, travel, transportation, and use of public lands and facilities.

Obviously, we are most distressed to have to take these actions, but this is a unique crisis with unique risks to millions and the postponement of conventions and star parties will not harm our mission or our organization. Failure to take these actions, however, could compromise the lives and health of our members and, in so doing, expose the League, the League Council, and Regional officers to legal liability.

If you have any questions about whether a specific regional activity is permitted (i.e. those not involving large gatherings), or if this decision poses unique problems in your region due to existing commitments, please contact a League officer.

Thank you for your understanding. Best wishes for the health and well-being of you and your family and friends.

-- For Ron Kramer, President, Astronomical League, and the Executive Committee,

Very Nice Cassini Story That Would Have Been Presented at 2020 MSRAL **by Jim Twellman**

This link will take you to Abigail Bollenbach's planetarium video. An amazing piece of work for a high-schooler who is very interested in astronomy. She was our speaker for the October meeting and would have presented this at the Jenks Planetarium for the conference. Use as big of a screen as possible, since it was intended for use in the planetarium. I used the Youtube TV on my smart TV (search: **Jenks Planetarium** then pick "Earth to Saturn Preview")

Per Abigail, feedback on Youtube is appreciated.

Jim Twellman

Here is the link to the video.

<https://www.youtube.com/watch?v=xLEoUdx1FTk&feature=youtu.be>

Member Recognition Program *by* Mark Jones

The St Louis Astronomical Society celebrated its 84th anniversary earlier this year. Since its founding in 1936, SLAS has promoted the science of astronomy to the St. Louis region. During the 1930s and 40s, space flight was still a dream and the collection of meteorites were the only way to study samples from outer space. SLAS members became experts in meteor shower events and became a regional hub for the meteorite collection and study. During the 1950s, SLAS formed and trained a Moonwatch team that sprang into action to observe the first Sputnik and US satellites. This team provided much needed data on the orbits of these bodies. During the 1950s and 60s, SLAS became an ardent supporter for the bond issue for a city planetarium. SLAS held telescope viewing sessions around the city and county to educate the public on the benefits of space science. In the 1960s, St Louis was a center for manned space flight with the Mercury and Gemini programs. After the opening of the planetarium, SLAS members helped staff planetarium positions and taught adult and child education programs. SLAS support of public telescope viewing at the planetarium has continued since the 1960s. In the 1980s as NASA programs began solar system exploration, SLAS moved its monthly meetings to Washington University, sponsored by the Earth and Planetary Sciences department. In the 1980s, SLAS supported the expansion of the planetarium into a multi-site St Louis Science Center. Even as space exploration became routine and public interest waned, SLAS understood the benefits of astronomy and space science to our region. SLAS expanded its astronomy outreach by supporting local science fairs as they evolved into the STEM events we see today. SLAS found a new way to engage the public by starting a local library telescope program that now has more than 150 telescopes in the St Louis region. St Louis region is now rich in clubs and organizations that drew inspiration from SLAS. The St Louis Space Frontier; astronomy clubs in St Charles, Franklin and Jefferson counties; and the Missouri Dark Skies Association all have current and former SLAS members as part of their memberships.

To accomplish all these things, it has taken the dedication and passion of many individuals. Therefore, SLAS has created a program to recognize these individuals whether they are members or non-members. It is fitting that SLAS, now in its 8th decade of operation, recognize the contributions to space science in our region.

Here are the descriptions of the awards in the program:

The Albert M. Obrecht Founders Award

In January 1936, Albert Obrecht (1883-1955) founded the St Louis Amateur Astronomical Society. Albert and a small group of members established the first Constitution and By-Laws. Officers and committees and budgets were established to provide the perpetual structure for stability and growth. The mission of the society was established in the Preamble of the Constitution as: "...to promote and diffuse the knowledge of astronomy...". Albert remained a member until at least 1954. The society was renamed St Louis Astronomical Society during Albert's tenure and SLAS remains committed to the legacy handed down by these original founders. In the spirit of Albert M. Obrecht, the Founder Award should be given to a board or committee person for their service to SLAS. The nominee must be a SLAS member. The nominee should have past or current positions as an officer or committee member. The nominee should demonstrate their contribution to the operation, stability and growth of the society.

The Lois D. Fitter Outreach Award

Lois Diane Fitter (1943-2016) served SLAS in many capacities. Lois was a member of SLAS from 1985 until her death in 2016. Lois was a former SLAS President and Committee chair and a telescope maker. Lois will be remembered for her enthusiastic astronomy outreach events. In a time when no one really kept track of volunteer hours. Lois was out there showing kids and adults views through one of her homemade telescopes, creating a sense of wonder and excitement wherever she went. She was certainly not afraid of the dark and would take her Subaru to dark sites around the area to work on her own projects and hone her skills. She was a very capable astronomer and speaker. Lois setup the original outreach plan for coordination with schools and organizations. She logged her events and established long lasting relationships with these organizations. In the spirit of

(Continued on page 5)

(Continued from page 4)

Lois D. Fitter, the Outreach Award should be given to a SLAS member with the most dedicated or most improved public outreach impact as a participant or coordinator.

The Richard D. Schwartz Supportive Faculty Award

Richard Dean Schwartz, PhD (1941-2011), was professor of astronomy at University of Missouri- St Louis from 1975 to 2003. When Dick arrived at the University of Missouri-St. Louis in 1975, he was the only astronomer in the Department of Physics. He built the astronomy program and initiated the B.S. in physics with an astrophysics option. Dick compiled a distinguished record of research that gave him an international reputation as an astrophysicist. During his career, Dick pioneered a new research area studying the energetic mass loss in young stars, there have been over 2000 citations to his 80 scientific papers. In 1999 he received the Chancellor's Award for Research and Creativity for his distinguished research record. Dick became a member of SLAS shortly after coming to St Louis and would present his research at SLAS meetings. In the spirit of Richard D. Schwartz, the Supportive Faculty Award should be given to a local educator at K-12 or college level who supports the mission of SLAS by providing astronomy-related talks to SLAS or the St Louis area. The nominee does not have to be SLAS member.

The Robert E. Cox Popular Astronomy Award

Robert Edward Cox (1917-1989) moved to St Louis in 1960 to work for the McDonnell Aircraft Company. His optical shop produced prototypes in connection with flight testing of Voodoo and Phantom fighter planes, as well as for the Mercury and Gemini spacecraft. Optics from his shop flew on all American manned space missions up through Gemini 8. Cox retired from McDonnell-Douglas in 1982. Bob was Sky and Telescope's "Gleanings for ATMs" column editor from 1956 to 1977. Bob received the Astronomical League Award in 1962 and the Clifford Holmes Award in 1980. Bob was a member of SLAS from 1960 until his death in 1989. Bob was an early supporter for the building of the McDonnell Planetarium and taught numerous classes at the planetarium after it opened. Through his talks and articles Bob help popularize astronomy and telescope making locally, nationally and internationally. In the spirit of Robert E Cox, the Popular Astronomy Award should be given to a local amateur who publishes or produces work recognized at a regional or national level or having major contribution to popularizing astronomy at the regional or national level. The nominee does not have to be SLAS member.

The Alfred L. Woods Mentoring Award

Alfred Lee Woods (1911-2004) was a member of SLAS since the mid-1960's and was elected to a term as a board member at large to the board of directors. Al was the 1993 Amateur of the Year for the Mid-States region of the Astronomical league. Al was a gifted telescope maker and optical fabricator. Al could grind and polish mirrors and lenses to ultimate precision. Al fabricated a number of very difficult telescope designs including 2 and 3-mirror Schiefspiegler telescopes. Al mentored amateur telescope makers across the globe. Al educated his follow amateurs at the annual SLAS Homemade Fest. Al's designs were featured on Amateur Telescope Making magazine and other publications. In the spirit of Alfred L Woods, the SLAS Mentoring Award should be given to a SLAS member for mentorship in astronomy, telescope and gadget making to fellow amateurs.

The form for nominations will be published on the website within the next week.

The deadline for nominations for this year will be July 1st.

Once completed, the form will be emailed to awards@slasonline.org with the subject line Award Nomination Form Submission.

The Award Review Committee will meet and select awardees by August 1st.

The awards will be presented at the September general meeting for SLAS.

Expedition to See the Northern Lights

by

John and Kay Strebeck and Lynne Lang

Among the most awesome of celestial displays, the 'Northern Lights', or Aurora Borealis, are mesmerizing to the eye for their spectacular waving curtains of colorful light. With observing auroras on our bucket lists, John and Kay Strebeck, Gary and Lynne Lang, Mike and Susan Brost, recently journeyed north to Fairbanks, AK, to view the Northern Lights. Nighttime temperatures hovered at a shivering -20°F during the last week of February, but despite the freezing weather, forecasts predicted optimal chances of observing the aurora. With the sliver of moonlight at New Moon offering dark skies, we also had the good fortune of four cloud-free nights.

Types of Aurora

(with increasing energy levels)

Homogeneous Arc
Rayed Arc
Rising Vapor Column
Corona

Each night the display started first as a greenish band of light low along the northern horizon (the 'homogeneous arc'), about 10 pm local time. As the evenings progressed, the displays became more energetic. Curtains and streamers were common in the middle of the night and into the early 2-3 am hours. The third night gave a spectacular display, as luminous shafts of light climbed high in the sky, even on occasion projecting directly overhead. The rays, shapes, and curtains during this energetic phase were changing in very short time frames of 5 seconds or less. Pulses of bright spots were moving rapidly across the sky, horizon to horizon, leaving very bright arcs. In total, we saw three of the four types of aurora, with 'corona', the most energetic, being the only aurora type we did not see.

The experience certainly exceeded our expectations. We stargazed at times from inside our cozy Airbnb that had several large windows facing north, located 17 miles north of the city. We found the University of Alaska website invaluable for Northern Lights insights, predictions, and science: <https://www.gi.alaska.edu/monitors/aurora-forecast>.

Lynne and Mike captured these scenes using special camera equipment. These were taken with Lynne's Nikon D7000 camera, zoom lens (15-30 mm, f/2.8, ISO 4000-6000 for 4-5 seconds exposure times). The photos revealed even more structure and depth than was visible to our eyes. While the green color dominated the aurora, we did see tones of red, purple and blue faintly at times, and they captured well on the photos.



Photo 1.
Homogeneous Arc
Aurora.

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Photo 2.
Rayed Arc Aurora

Photo 3.
Rising Vapor Column Aurora



Photo 4.
The Aurora Expedition Crew



Looking at the aurora - from the inside out



**St. Louis Astronomical Society
Devoted to the Interest and Advancement
of the Science of Astronomy**

Executive Board Meeting Minutes March 5, 2020

1. Opening Activities

a. Attendance: Jim Small, Larry Campbell, Brad Waller, Brent Buch, Mark Jones, Bill Winningham
b. Open Meeting 7:03pm c. Approval of last month's meeting minutes. Larry motion to approve second by Jim minutes were approved d. Dates for 2020: Apr 2, May 7, Jun 4, Jul 2, Aug 6, Sep 3, Oct 1, Nov 5, Dec 3

2. Upcoming General Membership meeting topics:

a. Jim and Mark may be not be at meeting the March meeting
b. Speaker: Joseph N Marcus, MD; Carl Lampland, Pioneer Infrared Astronomer; SLAS c. Speaker Press Release: not out as of the board meeting d. Special Awards needed: Leftover recognition pins? e. Special Business needed f. A101: none g. Door-prizes: Equinox door prizes h. Brad to provide Bill with inventory of SLAS mugs

3. SLAS Financial Report

a. Balance Sheet – Observatory fixed asset and insurance. Trout Lodge Escrow \$14.21, need name b. Profit/Loss report lots of members renewals, \$800 net income c. Magazine renewals – update SLAS page remove the magazine renewal and replace with back to magazine website for direct renewal. d. Quick Books 2016 now being used e. Annual Budget meetings start in September f. Corporate filings next due August 2020

4. Speaker Committee

a. Budget - \$500 b. Upcoming speakers: April-Raymond E Arvidson, PhD, May-William McKinnon, PhD, June-Vayujeet Gokhale, July-Amy E Kimball, PhD, August-Jeffrey Gillis-Davis, PhD, October-Marco Cavaglia, PhD, November-Brett McGuire, PhD, December- Maura McLaughlin, PhD c. Open dates: d. Topics of interest e. Stipends f. Travel none until October and November

5. Membership Initiatives

a. Budget - \$400 b. Welcome Aboard Meetings c. Raffles about \$100 spent for prizes d. Attendance prizes – solstice, equinox e. Bill renewal reminder sent out in Jan and now a lot of renewals are coming in f. Jim bought some items for MI – flash-cards, moon phase chart

6. Membership Recognition

a. Total Budget \$900 b. NSN Outreach Awards- Brad has remaining certificates and pins to hand out c. Membership report: No report. d. Member anniversary awards – Award at November meeting e. New Award program - \$600 budget f. 2020 Budget for New Award program - \$600 i. New Award Committee report- Larry chairman ii. New Award Policy and nomination process iii. Nominations open Dec 1st iv. Nomination submittal deadline May 1st v. Nomination reviews to be complete by Aug 1st vi. Award selection by Aug 1st vii. Plaques purchased viii. Awards presented at September meeting

7. Outreach

a. Budget - \$1100 b. Member Training Program Status No Report c. Purchase of T-shirts for volunteers completed training d. Purchase of lawn signs – spent \$112 Francis Park land signs received. 3 given to Bill Breeden, Brad has 1 sign e. NSN Awards- \$100 budget Awards/recognition – See meeting notes above, pins received \$44 for 25 total, 3 free, 22 extra ordered @ \$2 each. f. Upcoming outreach events g. Storage containers for holding table runners, approximately \$40

8. Old Business:

a. Training Program start a committee b. New membership awards Program start a committee
c. Star Party request policy – resolved prior to meeting

9. New Business: Brad would like to get 2 A-frame. One for Wash U. and one for Francis Park. Discussion on using existing frames and to use SLAS lighted signs.

10. Other Committee Reports: If needed

A. SLSC Business:

a. First Friday actions 2 RSVPs with telescope b. Other immediate business – April 18th tables inside, Planetarium side. Brad will put into NSN and send message for volunteers Astronomy Day is May 2nd Brad to talk Eric.

B. SLCL Business:

a. Annual contract b. Upcoming events

C. Jefferson College Business:

a. Committee Meeting report- b. Upcoming Outreach Event - Next viewing this Sunday.

D. Library Telescope Committee

a. Budget – \$650 b. Upcoming builds or maintenance events-Build held Feb 29th c. Maintenance budget - \$200, no bills submitted d. Mileage re-imbursement - \$250, no bills submitted e. Promotional materials - \$200, no bills submitted f. Money from Cape Girardeau Library - \$307.50

E. SLAS Social Events

Ja. Budget - \$300 b. Homemade Fest - \$100 budget, Prize list submitted to Bill for reimbursement, suggest avoiding new Moon weekend in the future. \$11.06 from microcenter for Pi Zero wireless, \$10.91 from Harbor Freight for Apache Case, \$49.10 from Schillers for Intervelometer, \$20 for two shirts used as prizes, donated prizes included red flashlight, Celestron cell phone bracket from Lookin' Up Optics c. Star-B-Q - \$200 budget, date and venue? Any suggestions? September

F. SLAS Brochures

a. Budget \$325 b. Quarter cards

G. Loaner scope Program

a. Budget - \$100 b. New donations no donations c. Shed status: Will try to get driveway prepped this weekend. Goal is to have mini retaining wall built in prep for move d. Items for sale

H. SLAS Library

a. Budget - \$400 - Kalmbach order \$81.53

I. Merchandise

2 T-shirts used for Homemade fest

J. Telescope Making

K. Newsletter

L. Website

M. Social Networking

N. Night Sky Network

Pins and certificates awarded.

O. SLASdialogs

P. Dark Site

Q. Observing Programs

One member working on Solar System Award

R. Star Parties

Donation from LaSalle Springs - \$100

11. Closing Activities

Motion to adjourn by Brad second by Bill. Meeting ended 9:02pm

St. Louis Astronomical Society
Profit & Loss Budget vs. Actual
January through March 2020

St. Louis Astronomical Society
Balance Sheet
As of March 31, 2020

| | Jan - Mar 20 | Budget | \$ Over Bud... |
|--------------------------------|-----------------|-----------------|-------------------|
| Ordinary Income/Expense | | | |
| Income | | | |
| Events Income | | 405.00 | (405.00) |
| Magazine Subscription | 668.45 | 504.00 | 164.45 |
| Membership Dues | 1,230.00 | 1,215.00 | 15.00 |
| Total Income | 1,898.45 | 2,124.00 | (225.55) |
| Cost of Goods Sold | | | |
| Magazine Subscriptions | 602.55 | 504.00 | 98.55 |
| Total COGS | 602.55 | 504.00 | 98.55 |
| Gross Profit | 1,295.90 | 1,620.00 | (324.10) |
| Expense | | | |
| 1-Programs & Events | 572.87 | 1,427.00 | (854.13) |
| 2-Newsletter | | 180.00 | (180.00) |
| 3-Library expense | 81.53 | 125.00 | (43.47) |
| 5-Loaner Scopes | | 25.00 | (25.00) |
| 6-Brochures | | 150.00 | (150.00) |
| 8-Website | 179.40 | 355.00 | (175.60) |
| 9-Administrative Expen... | 83.61 | 90.00 | (6.39) |
| Total Expense | 917.41 | 2,352.00 | (1,434.59) |
| Net Ordinary Income | 378.49 | (732.00) | 1,110.49 |
| Other Income/Expense | | | |
| Other Income | | | |
| Donations | 102.05 | | 102.05 |
| Interest Income | 57.35 | 50.00 | 7.35 |
| LTP Receipts | 1,345.40 | | 1,345.40 |
| Proceeds from Lens Sales | 521.99 | | 521.99 |
| Total Other Income | 2,026.79 | 50.00 | 1,976.79 |
| Other Expense | | | |
| LTP Disbursements | 1,799.26 | | 1,799.26 |
| Total Other Expense | 1,799.26 | | 1,799.26 |
| Net Other Income | 227.53 | 50.00 | 177.53 |
| Net Income | 606.02 | (682.00) | 1,288.02 |

| | Dec 31, 19 | Mar 31, 20 |
|---------------------------------------|------------------|------------------|
| ASSETS | | |
| Current Assets | | |
| Checking/Savings | | |
| Checking - First Bank | 7,187.45 | 7,585.44 |
| Deposit, Certificate of | 15,841.67 | 15,883.97 |
| Library Telescope Escrow | 1,053.86 | 675.00 |
| PayPal | 77.94 | 303.48 |
| Savings - First Bank | 41,122.69 | 41,137.74 |
| YMCA Trout Lodge Escr... | 14.21 | 14.21 |
| Total Checking/Savings | 65,297.82 | 65,599.84 |
| Other Current Assets | | |
| Inventory Asset | 761.53 | 761.53 |
| Undeposited Funds | 20.00 | 100.00 |
| Total Other Current Assets | 781.53 | 861.53 |
| Total Current Assets | 66,079.35 | 66,461.37 |
| Fixed Assets | 15,000.00 | 15,224.00 |
| TOTAL ASSETS | 81,079.35 | 81,685.37 |
| LIABILITIES & EQUITY | | |
| Equity | | |
| Opening Bal Equity | 8,497.66 | 8,497.66 |
| Retained Earnings | 69,757.14 | 72,581.69 |
| Net Income | 2,824.55 | 606.02 |
| Total Equity | 81,079.35 | 81,685.37 |
| TOTAL LIABILITIES & EQUITY | 81,079.35 | 81,685.37 |

We could use articles for the newsletter. The following topics are fine for submission.

1. Star party reports. Let us know how a star party you attended went! Photos would be most welcome in addition to the article.

2. Observing reports. Actually made it out observing? Let us know how it went. Taken some astro photos? Please submit!

3. Bought something or built something? How about a review or an article!

Send to newsletter@slasonline.org

SLAS EVENTS

Upcoming Star Parties and Other Events

For details on these and other upcoming events, check out the Night Sky Network Calendar linked on the Home Page for SLAS at

<http://www.slasonline.org>

SLAS Executive Board Meetings *Location will be at Nicoletti's Restaurant in Valley Park* All meetings are on First Thursdays unless noted. **Note: Board meetings will be via Zoom until further notice.**

May 7, June 4, July 2, Aug 7, Sept 3, Oct 1, Nov 5, Dec 3

Dark Sky Observing Dates

Francis Park Events: These events are on Wednesdays of the week nearest the first quarter Moon

Jun 24, July 29, Aug 26,
Sept 23, Oct 21

Sky Orienteering Events For members who want to gather and do some relaxed observing at Babler State Park

Please RSVP if you plan to come!

SLSC Public Telescope Viewing Events: These events are held the first Friday of the month
Planetarium shows start at 7pm Jun 5, July 3, Aug 7, Sept 4, Oct 2, Nov 6, Dec 4

Pattonville Observatory Public Viewing Dates
Cancelled until further notice

Broemmelsiek Astronomy Park Public Viewing
Cancelled until further notice

UMSL Observatory
For directions and map
<http://www.umsi.edu/~physics/About%20the%20Department/astro.html>

All sessions include viewing of 1st quarter Moon with additional objects

Skywatch Hotline: 314-516-5706

Saturdays:

LET US KNOW YOU ARE COMING!

To RSVP for any of these events log in to the Night Sky Network and submit your RSVP. If the event is canceled, you will be notified immediately according to the preferences you have selected.

April

| | |
|--------|--|
| 17 Fri | SLAS Regular Meeting (Zoom) |
| 18 Sat | SLAS Dark Sky Observing |
| 22 Wed | Webinar: Using apps to explore the universe. |
| 27 Mon | Natural Bridge Library (cancelled) |
| 28 Tue | Lewis and Clark Library (cancelled) |
| 29 Wed | Francis Park Stargazing (cancelled) |

May

All events scheduled for May that involve meeting in person will be cancelled.

| | |
|--------|-----------------------------|
| 7 Thur | SLAS Board Meeting (Zoom) |
| 15 Fri | SLAS Regular Meeting (Zoom) |
| 16 Sat | MSRAL Business Meeting |

For other events, watch the calendar on the website. Virtual stargazing events and other online activities will be registered there. We hope you can join us for some of these activities!

SLAS Merchandise Available

SLAS merchandise is now set up for embroidery at Headz n Threadz at <https://hnt.threadthis.com/>

There are two locations:

Galleria: 2495 St. Louis Galleria, St. Louis, MO 63117 Telephone: 314.862.2695
galleria@headznthreadz.com

Simply take the garment, hat, etc you wish to have embroidered and they will take care of it. They have the SLAS logo on file. You may make modifications to the colors if you wish.

SLAS Logo is also available at Infini-tees



SLAS MEMBERSHIP APPLICATION



Name: Last _____

First, Middle Initial _____

Address _____

City, State, Zip Code _____

email address _____

Youth @ \$10.00 / 1 year (18 yrs or younger) \$ _____

Individual @ \$25.00 / 1 year \$ _____

Family @ \$40.00/1 year \$ _____

Publications with discount available with your SLAS membership:

Sky and Telescope @ \$32.95 / 1 year \$ _____

(S&T may also be renewed at their website:
<http://www.skyandtelescope.com>)

Astronomy @ \$34.00 / 1 year \$ _____

TOTAL ENCLOSED \$ _____

Please send completed form with check (no cash please) made payable to

*St Louis Astronomical Society*Don Ficken, Membership
13024 Barrett Crossing CT
St. Louis, MO 63122

Check all that apply:

- ☐ Renewal
☐ Address Change Only
☐ Please send my newsletter by regular mail
☐ ***New Member!***

SLAS OFFICERS

President *Jim Small* 314-307-0692
president at slasonline.org**Vice President** *Bradley R Waller* 314-481-7250
vicepresident at slasonline.org**Secretary** *Mark Jones* 636-394-2342
secretary at slasonline.org**Treasurer** *Bill Winningham, (Don Ficken - membership)* 636-357-2763
treasurer at slasonline.org**Hospitality** *Larry Campbell* 636-244-2867
hospitality at slasonline.org**Board Members at Large:***Tom Nickelson* 314-346-9565
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board21 at slasonline.org*John Newcomer* 314-496-4636
board22 at slasonline.org**ALCOR** *Bill Winningham* 636-357-2763
(Astronomical League Correspondent)
treasurer at slasonline.org**MSRAL Rep.** *Jim Small* 314-909-7211
msral_rep at astroleague.org

COMMITTEE CHAIRS

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librarian at slasonline.org**Library Telescope Program** *Don Ficken* 636-851-9630
librarytelescope at slasonline.org**Loaner Equipment** *Greg Gaines* 314-277-3082
loaner at slasonline.org**Merchandise** *Vacant*
merchandise at slasonline.org**Membership** *Don Ficken* 636-225-0269
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dialogsmoderator at yahoo.com**Star Party Coordinator** *Bill Breeden* 314-276-3613
starparty at slasonline.org**Telescope Making** *Bill Davis, Jim Melka* 314-469-3061
telescope at slasonline.org**Webmaster** *Jim Small* 314-909-7211
webmaster at slasonline.org

Devoted to the Interest and Advancement of the Science of Astronomy

ST. LOUIS ASTRONOMICAL SOCIETY

We're on the Web!
<http://www.slasonline.org>

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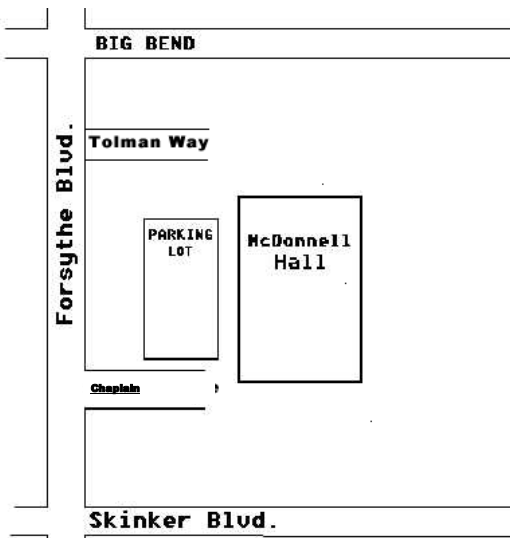


Who We Are and What We Do

St. Louis Astronomical Society is a not-for-profit organization established in 1936. SLAS is devoted to the interest and advancement of the science of astronomy. Our mission is to promote an understanding of the science of astronomy to our members and to the public. Membership is open to anyone with an interest in astronomy.

For more information contact any SLAS officer or visit our website listed above. SLAS is affiliated with the Astronomical League, Night Sky Network and the Mid-States Region of the Astronomical League.

Meetings are held the 3rd Friday of each month at McDonnell Hall at Washington University. See the map to the right for directions.



St. Louis Astronomical Society

Jim Small
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St. Louis, MO 63122