

★ ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 55, No. 1 – January 2007

***** IMPORTANT ANNOUNCEMENTS *****

SFAA ANNUAL DINNER CANCELLED

*SFAA's Annual Dinner on January 27
at Delancey Street in San Francisco,
is cancelled.*

DATE CHANGE OF FEBRUARY GENERAL MEETING

A special February Awards Meeting will be held on

FEBRUARY 14

(February 21 meeting moved to February 14)



NEWSLETTER DELIVERY

*Commencing with the December 2006 issue, ABOVE THE FOG,
SFAA's official newsletter, is being delivered to its membership via e-mail.*

*When the newsletter becomes available,
members receive an e-mail notification with a link to the online version.*

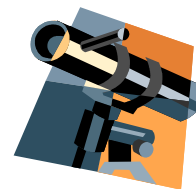
*If you wish to receive the newsletter in hard copy format,
please submit a request to treasurer@sfaa.astronomy.org.*

2007 CI ub Officers & Contacts

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CI ub Tel escopes

The SFAA owns eight very fine, easy to use, loaner telescopes well-suited for deep sky, planets, and star parties. All scopes are available to any SFAA member. The loaner custodians for the majority of our fleet are Pete & Sarah Goldie. Please contact them at pg@lbin.com for details if you are interested in borrowing a scope or if you have items you can donate for the loaner program (eyepieces, star maps/books, red flashlights, collimator, etc.). Please contact the appropriate member indicated below if you are interested in borrowing one of the telescopes.



- 1) 6" f/10.3 Dobsonian/Pete Goldie
- 2) 8" f/7 Dobsonian/Pete Goldie
- 3) 8.5" f/6 Dobsonian/Pete Goldie
- 4) 10" f/8 Dobsonian/Pete Goldie
- 5) 114mm f/4 Newtonian StarBlast/Pete Goldie
- 6) 8" f/10 Celestron SCT/Annette Gabrielli/agabrielli-sfaa@sbcglobal.net
- 7) 8" f/10 Meade SCT/Stefanie Ulrey/treasurer@sfaa-astronomy.org
- 8) 9.5" f/5.6 Celestron Newtonian/Ken Frank/kennethfrank@planitarium.net

CI ub Astronomy Videos

The SFAA owns a series of astronomy videotapes featuring Alex Filippenko, a world-renowned professor of astronomy at UC Berkeley. The videotapes provide an introduction to astronomy and cover topics such as the Solar System, the lifecycles of stars, the nature of galaxies, and the birth of the Universe. The SFAA loans the tapes free to all members. If you are interested in viewing these tapes, you may check them out at any of the SFAA General Meetings. These tapes were kindly donated to the SFAA by Bert Katzung. For information on the course tapes themselves:



<http://www.teach12.com/ttc/assets/coursedescriptions/180.asp>

MEMBERSHIP DUES

The mailing label on the back of this issue shows the month and year through which your membership was paid. If the date has passed, your membership has expired. Members may receive no more than one bulletin after the expiration of membership. Please renew soon if your membership is expiring.

SFAA WEBSITE AND ONLINE SERVICES



The SFAA web site at sfaa-astronomy.org is provided to our members and the general public for the sharing of club information and services. The web site contains links for club [star parties](#), [events](#), [newsletters](#), [lectures](#) and [meetings](#). If you wish to interact with other people who are interested in astronomy, the SFAA web site offers public and members only [bulletin board forums](#). If you wish to remain up-to-date on club activities, then we encourage you to subscribe to one or both of our [public mailing lists](#), which will allow you to receive our newsletter and/or club announcements via email. Other useful and interesting information and services are available on the site such as [observing location reviews](#), member [astronomy photos](#), and [members only telescope loans](#). Information about SFAA's membership, organization and by-laws are available at the club's online public document [archive](#). If you need to contact a representative of the SFAA, then please visit our [contacts](#) page to help in finding the right person to answer your questions.

Above the Fog is the official bulletin of the San Francisco Amateur Astronomers. It is the forum in which club members may share their experiences, ideas, and observations. We encourage you to participate by submitting your articles, announcements, letters, photos and drawings. We would also like to hear from our new members. Tell us about yourself – what you have done in the past and what other clubs you have joined. **The deadline for the next issue is the 20th day of the month.** Send your articles to Phil Estrin at pestrin@dir.ca.gov.

THROUGH THE FINDER...

Two years ago, there was a momentary pang of organizational discomfort when it seemed no one would be willing to step forward to take over the Presidential duties from Michael Portuesi. I now see that many of us were just playing chicken. No-one was about to let the SFAA go under - it was just a matter of how long after the "curtain call" we could hold our breath and avoid eye contact before one of us would volunteer and step forward. I blinked first but my sense then was that there was plenty of commitment among our members to do whatever it takes to make sure the organization thrives. That has certainly been borne out. It still takes a community to raise an amateur astronomer!

You've now elected a new slate of Officers and Directors ready to continue the operation of SFAA. Ken Frank, as the incoming President, will not so much be taking on new responsibilities as stepping out in front of the curtain for all to see how much work he has been doing for several years now. I often had to rely on Ken's energy and imagination, and now SFAA will have a more direct conduit to his talents. Likewise, I was able to rely on Michael Portuesi for his experience and sage advice. Michael will continue to provide that in the coming year, as will the other experienced hands on the Board. Annette Gabrielli seems to be powered by the moon in keeping up with the monthly cycles of producing our Newsletter, and Joe Amato is continually getting under the hood to keep the web site tuned up. Of course, SFAA relies on the work of more folks than just Board members. Linda Mahan has done such a great job finding outstanding speakers for our monthly meetings - we need to do an equally good job of filling the seats in the Randall Theater.

And, finally, a note that we had to cancel this year's annual dinner. It turned out that several key members would not have been able to attend that night and due to a delay in getting hard copies of our newsletter out to those members who don't receive it electronically, reservations were running late. Instead we will hold our presentation of the Annual Awards and the Installation of the new Board on Wed, February 14, at the Randall Museum. Note: this is the 2nd Wednesday of the month, not the usual 3rd Wednesday. It's not hard to remember, there's a easy mnemonic device - it's Valentine's Day! Unfortunately I won't be able to join you in the festivities. Instead I will have a cervical laminectomy, oh thrill. But I'm told that in a few months I will have enhanced powers - I'll be able to look UP! A crucial skill for an amateur astronomer.

So Happy New Solstice, and remember: Valentine's Day!

and I still hope to see you in the dark.

John Dillon
Ex-President, SFAA

OUR THANKS AND APPRECIATION

**San Francisco Amateur Astronomers wishes to convey its thanks and appreciation to
JAMES MACE
for his donation of a Meade field tripod with wedge.**

IMPORTANT DATES

SFAA GENERAL MEETINGS & LECTURES

(No January General Meeting)

JANUARY 27 – ANNUAL DINNER IS CANCELLED

Wednesday, February 14

Wednesday, March 21

7:00 p.m. Doors open. 7:30 p.m. Announcements. 8:00 p.m. Speaker
Randall Museum, 199 Museum Way (Near 14th Street and Roosevelt)

BOARD MEETINGS

Tuesday, January 9

Tuesday, February 13

Tuesday, March 13

7:00-8:30 p.m.

Randall Museum, 199 Museum Way
(Near 14th Street and Roosevelt)

CITY STAR PARTIES - Telescope Clinic one hour before sunset

Saturday, January 13, 5:06 p.m. at Land's End (Point Lobos)

Saturday, February 24, 5:52 p.m. at Land's End (Point Lobos)

Saturday, March 24, 7:18 p.m. at Land's End (Point Lobos)

Map and directions – Land's End (Pt. Lobos) <http://www.sfaa-astronomy.org/clubarchive/directions-pointlobos.p>

Weather may cancel the City Star Party. Call the SFAA Hotline at (415) 289-6636 AFTER 4 PM to learn the status of the event and the location. If the hotline announces the Star Party is cancelled, the Telescope Clinic and Lecture are cancelled as well. However, if the Hotline does not cancel the Star Party, be assured that the Lecture will proceed as scheduled even given less-than-perfect telescope conditions.

Please also note that while City Star Parties WILL ALWAYS be held on Saturdays, some will be closer to the last quarter phase of the moon, while others will be close to first quarter. This is so we can work around dates for Mt. Tam public star parties as well as our members-only events on Mt. Tam.

MT TAM STAR PARTIES – SPECIAL USE PERMIT – MEMBERS ONLY

SATURDAYS -- January 20, 5:14 p.m. – Gatekeeper **VOLUNTEER NEEDED**

February 17, 5:44 p.m. – Gatekeeper **VOLUNTEER NEEDED**

March 17, 7:12 p.m. – Gatekeeper **VOLUNTEER NEEDED**

UPCOMING SPEAKERS

MARCH GENERAL MEETING - MARCH 14

R. JAY GABANY - POSTCARDS FROM THE UNIVERSE

Take a tour with one of the Bay Area's finest astrophotographers. Imaging from New Mexico and Australia, R. Jay GaBany presents Cosmotography. His tireless attention to detail reveals stunning new vistas, described with a poet-philosopher's sensibility. You will see deep sky objects in a new and exciting way. Be sure to attend this special event!

APRIL GENERAL MEETING – APRIL 18

DARREN CROTON – GALAXIES AND SUPER-MASSIVE BLACK HOLES IN THE NEAR AND DISTANT UNIVERSE

Darren Croton, UC Berkeley, is a member of the International DEEP 2 Galaxy Red Shift Survey. Using the largest telescopes, the results of the measurements and positions of galaxies have led to unexpected discoveries in galaxy evolution and black holes.



NEW SFAA MEMBERS

Scope City is offering to new members a \$25 credit toward the purchase of telescopes and binoculars.

Obtain a receipt for dues payment from
Stephanie Ulrey, Treasurer,

treasurer@sfaa-astronomy.org,

Contact Sam Sweiss at Scope City
to arrange for your discount.



SAN FRANCISCO
AMATEUR ASTRONOMERS

AWARDS NIGHT
Wednesday
February 14, 2007 . 6:30 p.m.

RANDALL MUSEUM
199 Museum Way, San Francisco

A VERY SPECIAL SFAA VALENTINE'S DAY MEETING

What better way to kick off the Astronomical New Year than to introduce the members of SFAA to their new Officers and Members of the Board at this special meeting! Without them, there would be no SFAA, and we are all proud and grateful for their contributions each year. We will be thanking those who are stepping down from their term of service and welcoming our new "team." We also will, no doubt, learn a few things about these friends of SFAA.

Our club has special honors bestowed annually to a few of our members. We recognize an individual's outstanding service to SFAA with the Service Award. You will learn more about this award and the deserving person who earned it for last year's service. We also will be presenting the Observer of the Year Award to the person who was the most outstanding astronomical observer. You will have the opportunity to learn why the award was earned by the outstanding honoree for last year's diligent work. Other Awards may also be presented.

There are two contests each year, held at the December meeting. Members compete in the Art Contest and the Astrophotography Contest. First and second prizes will be awarded in each category. You will meet the winners and see the winning entries, and perhaps they will provide inspiration for your own submission(s) in this coming December's contest.

All members are urged to attend this meeting, enjoy the refreshments and time with our friends and take advantage of the opportunity to convey thanks and appreciation for our contributions to San Francisco Amateur Astronomers.

BOOK REVIEW: DOUBLE STARS FOR SMALL TELESCOPES: MORE THAN 2,100 STELLAR GEMS FOR BACKYARD OBSERVERS BY SISSY HAAS. SKY PUBLISHING, 2006.

Michael Portuesi

When it comes to double stars, Sissy Haas is not only an experienced observer, she is a very enthusiastic observer as well. The double star articles Haas has authored for *Sky and Telescope* magazine over the past decade are among the best observing articles the magazine has published. Her excitement for double stars shines through in every paragraph.

Being such a big fan of Haas' writing, I even went to the library, photocopied her articles from back issues, and made my own double star "observer's guide" (this was before Sky and Telescope made their archive of back issues downloadable online). So it goes without saying I had high expectations for this book.

I was hoping *Double Stars for Small Telescopes* would be an observer's guide filled with more writing like her *Sky and Telescope* articles. However, I didn't find anything like this in her book. Instead, *Double Stars for Small Telescopes* is basically an Excel spreadsheet dump containing data for around 2100 double stars, grouped by constellation.

Besides the normal catalog information you'd expect, Haas provides very brief observing notes in a "spreadsheet cell" for each object. Haas has included her observations, as well as those of other skilled double star observers to compile the list. What you get here is the combined wisdom of a group of skilled observers, listing their picks for best targets of the best. You can use it to form the backbone of a double-star observing program that will last for quite some time.

But still, the book is essentially just a list. A nicely prepared and formatted list, but a list nonetheless. The editors at *Sky and Telescope* could have taken Haas's past magazine articles and edited them into the book, like they did for Sue French's *Celestial Sampler*. But they inexplicably missed this opportunity, and that leaves me disappointed by the book overall.

Please don't misunderstand me - I still think this book is worth owning, and I definitely recommend it. But since this book is primarily catalog data, I actually would have preferred to get it as a digital download to import into my astronomy software.

I personally feel *Double Stars for Small Telescopes* is fine for what it is, but it could have been a lot more. I encourage Sissy Haas to write another book: a true observer's guide to accompany this catalog.

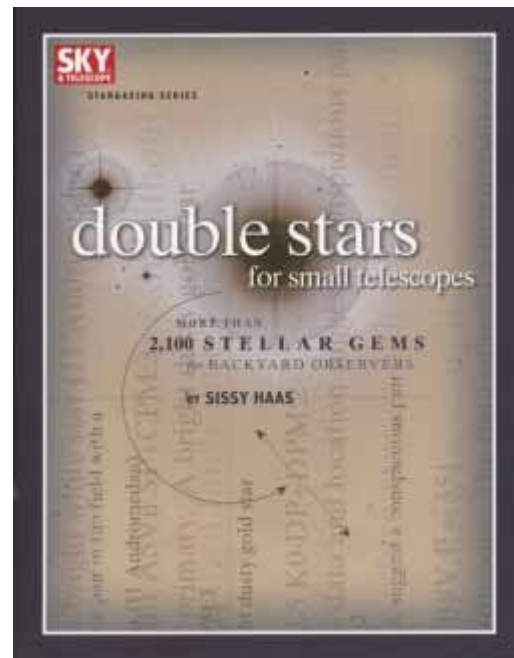
You can order this book online from Sky Publishing's website:

<http://www.shopatsky.com/index.asp?PageAction=VIEWPROD&ProdID=1163>

Bibliography: Sissy Haas in *Sky and Telescope*

You can make your own excellent double star observer's guide by locating these articles in the back issues of *Sky and Telescope*. Many of these articles (from 1996 onward) can be downloaded from Sky and Telescope's website: <http://skytonight.com/>

- "Enjoying Unequal Double Stars", Sissy Haas. *Sky and Telescope*, January 2002, page 118.
- "Double Jewels in Cancer", Sissy Haas. *Sky and Telescope*, March 1995, page 74.
- "Jewels in Lynx", Sissy Haas. *Sky and Telescope*, April 1994, page 72.
- "Doubles in Leo: Stars to Relax With", Sissy Haas. *Sky and Telescope*, April 1997, page 76.
- "Gems of the Desert", Sissy Haas. *Sky and Telescope*, April 1998, page 90.
- "Doubles near Procyon and Hydra", Sissy Haas. *Sky and Telescope*, April 2001, page 102.
- "Double Stars off Mizar", Sissy Haas. *Sky and Telescope*, May 2000, page 112.
- "The Extraordinary Doubles of Boötes", Sissy Haas. *Sky and Telescope*, June 1996, page 68.
- "Double Stars of Cepheus", Sissy Haas. *Sky and Telescope*, September 1998, page 106.
- "Wide Doubles in Capricornus", Sissy Haas. *Sky and Telescope*, October 1995, page 68.



APOCALYPTO - APOCALI MPO - APOCALI MBO - APOCABI MBO - APOCA...

John Dillon

I just saw "Apocalypto" - Mel Gibson's blood and guts foray into Mesoamerican history. I have a particular interest in Mundo Maya and archeoastronomy, and I had once met the main archeological consultant on this film, so I overcame my Gibsonian aversions and bought a bucket of popcorn and sat in the dark for 2 hours.



This revue is for amateur astronomers only. I will not comment on the anthropological, or sociological, or anatomical, or hematological, or blood-splattered gore, or vile and gruesome butchery, or throbbing sli.... [excuse me, I need to take a break for a minute]

OK, back to astronomy.

The central event of the film is the horrific ritual slaughter of captured slaves staged to ward off a total eclipse of the sun somewhere in the Yucatan peninsula 2 days prior to the arrival of the 1st Spaniards. [The classical Mayan civilization collapsed 500 years before the Spanish arrived! But I promised not to comment on the non-astronomical aspects of the film. Ignore this.] Planning this bloody spectacle would have required precise knowledge of where and when an eclipse would happen. The Mayans were exceptionally sophisticated observers of celestial mechanics (greater than any other New World culture, and the equal of most Old World ancients as well), and as advanced as their mathematics was – they could not have calculated that the path of totality would pass over their ritual center at a specified time! Like a very few Old World civilizations, the Mayans discovered the 19 year pattern of eclipse "seasons", the times when eclipses were possible, but they could not have compensated for the tiny perturbations of the moon's orbit that have a major impact on the precise location of the path of totality. Only rarely would a "predicted" eclipse actually be seen. In any case, their knowledge of eclipses was extensive and they would have well understood that to make an eclipse go away - just sit and wait. However, a precise and reliable prediction would not have been possible – and "close" doesn't count in ceremonial eclipse rituals. A partial eclipse is a total non-spectacle! Since a total solar eclipse was the promised big draw for the communal gathering and ritual sacrifice in this story, it's failure to occur would likely have roused the disappointed throng to call for the heads, and internal anatomy, of the priests! That should encourage sacerdotal caution. [Look it up – you don't get many chances to use a word like that.]

I will grant Mel some leeway on these intellectual and academic points (though they are central to the story's anthropology). Instead I will focus on how he did with portraying an eclipse as a Mayan spectator would have seen it.

Mel had the moon zipping across the face of the sun from 1st to 4th contact in about 2-3 minutes, rather than 2-3 hours. First of all, as we amateurs astronomers know, you can't look up and actually see the moon move across the sun – not without filters. I saw no pre-Columbian mylar in the crowd scenes. That's why partial eclipses are such non-events, even today. But Mel's priests lucked out with their prediction and as the assembled throng watched, the darkness increased in proportion to the disappearance of the sun - when half the sun was covered, things were half as bright. Seconds later, when he had the sun mostly covered, it was mostly dark. The actual experience of an eclipse is very otherwise. For those who have witnessed an eclipse, it is striking that there is little sensation of light attenuation till the sun is almost entirely covered (the eye/brain combo is very adaptable to light level changes). With only a faint sliver of sun exposed there is a palpable change in the intensity and quality of daylight and then, suddenly, darkness sweeps out of the west and engulfs the viewer in the shadow of the moon. The visceral sensation is such that even modern sophisticated eclipse chasers shiver from something other than the drop in temperature. The reality of a total solar eclipse is more visually stunning and more emotionally powerful than the faux spectacle Mel provided. And emotional spectacle was clearly a goal for this film. A few bucks for an astro-consultant would not have registered on the bean counter's spreadsheets and could have been recouped in enhanced popcorn sales. I was always near a phone, but it never rang.

But I held the most egregious error for last.

When the eclipse ends, Mel's hero, Jaguar Paw, escapes and darts off into the jungle and runs all night - under the glare of a full moon! A FULL MOON!! On the night of an eclipse? Mel, MEL! While the other errors are perhaps too subtle for your target audiences to notice or care about, having a full moon on the night of an eclipse portrays a complete ignorance of what a solar eclipse is and how it happens. Next time call your local amateur astronomy club for advice.

Oh the Horror, the Horror!

TRAVELS WITH JOHN & JANE & HECTOR & GEORGE & KATIE & DONNA & PATTIE TO DEATH VALLEY

Ken Frank



John, Jane & Katie

It all began when I was trying to figure out how I could spend time with both my families and do sidewalk astronomy in Death Valley with John Dobson, all in one holiday period. Well, you can't, but I tried anyway.

Early rising to Marin Airport then SFO to SNA John Wayne Airport in Orange County via United Airlines was the easy part.

After renting a car and visiting the Simpson, Allsep, Reynolds and Butler families in one day, including a boat cruise anchoring outside the Dana Point harbor for a swim in the Pacific.

Early again that next morning I drove to Samuel's florists where Donna owns a flourishing, always busy business; went across

the street and ate breakfast at Frank's. Tess, my waitress, proclaimed she saw Santa with sleigh and reindeer outside her New York window when she was six.

Anyway, after picking up John at the Vedanta center, helping Katie and Donna with loading the scopes in the rental van (Hector had already loaded the big scope and camping gear in his trailer), we caravanned -- well, sort of -- to Death Valley.

I drove with Jane and John in the Mojane van. Jane had brought her "Earthquake Country Faults" and "Geology of Owens and Death Valley" books. A running commentary of the incredible local geology ensued, peppered with John's stories of 40 years past experiences in the valley. I gained new-found respect for the natural forces at work on this planet, experiencing salt devils, high winds and beautiful snow-covered formations.

Donna, commanding her organizational skills, had arranged everything with the National Park Service as well as hotel reservations and camping. John did his slideshow to a few hundred interested and engaged visitors, including Jane's friends from the Old Town Astronomers and a fellow from Las Vegas who joined us for a late evening snack. Meanwhile, Hector, George, Katie, Pattie & Donna had set up four telescopes for the National Park visitors to see a clouded Moon and a bit of Orion.

Early that next morning, Jane and I took off for Marin to rejoin our Northern California families. All went well until the 101-Tully Road exit, when the transmission gave out. Philip, our jovial AAA tow truck driver, cheerfully arrived in minutes. While waiting to jockey into position, I showed Phil the first quarter Moon terminator and mare with my Zeiss 10 X 30's from his cab. Since he lives in San Jose, I suggested he visit Hogue Park and the SJAA on Fridays.

I awoke early again this morning to find Sirius and Orion staring me in the face. I hope John Dobson and Company had a clearer, darker sky for the rest of the week.



John and Ken with scopes waiting for the van

SFAA 2007 Calendar of Events

Mount Tam Public Events

Public nights on Mount Tamalpais start with a lecture in the Mountain Theatre, followed by public viewing in the Rock Springs parking lot. SFAA members may view privately after crowd departs, approx. 11 pm-2 am. Note that access to SUP private events is contingent on our participation in the public events.

- April 21, sunset 7:42 pm
- May 19, 8:08 pm
- June 23, 8:26 pm
- July 21, 8:19 pm
- August 18, 7:51 pm
- September 15, 7:11 pm
- October 13, 6:29 pm

Mount Tam SUP Events

SUP (Special Use Permit) observing nights on Mount Tamalpais are open *only* to SFAA members. Please arrive by sunset (times listed below). A permit is required for each car. We must vacate the mountain by 2 am except on specially approved nights (such as Messier Marathon).

- January 20, 5:14 pm
- February 17, 5:44 pm
- March 17 (Messier Marathon night), 7:12 pm
- April 14, 7:37 pm
- May 12, 8:01 pm
- June 16, 8:25 pm
- July 14, 8:23 pm
- August 11, 7:59 pm
- September 8 (Picnic night), 7:21 pm
- October 6, 6:39 pm
- November 10, 4:56 pm
- December 8, 4:44 pm

City Star Party

CSP events start at sunset (times listed below) with a public lecture, followed by public viewing. Land's End (LE) and the Randall Museum (RM) are the locations for the CSP this year.

- January 13 (LE), 5:06 pm
- February 24 (LE), 5:52 pm
- March 24 (RM), 7:18 pm
- April 28 (LE), 7:49 pm
- May 26 (LE), 8:13 pm
- June 9 (RM), 8:22 pm
- July 7 (LE), 8:26 pm
- August 25 (LE), 7:42 pm
- September 22 (RM), 7:00 pm
- October 20 (LE), 6:19 pm
- November 17 (LE), 4:51 pm
- December 15(RM), 4:46 pm

Board Meetings

2nd Tuesday of every month, at the Randall Museum. 7 pm. All SFAA members are invited.

- January 9
- February 13
- March 13
- April 10
- May 8
- June 12
- July 10
- August 14
- September 11
- October 9
- November 13
- December 11

General Meetings

3rd Wednesday of every month (except January) at the Randall Museum. Doors open 7 pm, announcements 7:30 pm, guest speaker 8 pm. All are invited.

- February 14 (special date)
- March 21
- April 18
- May 16
- June 20
- July 18
- August 15
- September 19
- October 17
- November 21
- December 19

Other SFAA Events

- Messier Marathon, March 17 (Alternate night March 24)
- Astronomy Day, April 21
- Fremont Peak, May 11-12
- Annual Picnic, September 8
- Yosemite Weekend, TBA

Other Astronomy Events

- Riverside Telescope Maker's Conference, May 25-28
www.rtmcastronomyexpo.org
- Grand Canyon Star Party, June 9-16
www.tucsonastronomy.org/gcsp.html
- Shingletown Star Party, July 11-16
www.shingletownstarparty.org
- Oregon Star Party, August 16-19
www.oregonstarparty.org
- Fremont Peak Star-B-Q, TBA
www.fpoa.net
- Calstar (Lake San Antonio), October 11-14
www.sjaa.net/calstar

Founded in September 1952, the San Francisco Amateur Astronomers (SFAA) is an association of people who share a common interest in astronomy and other related sciences. Our membership consists of people from all walks of life, educational backgrounds and ages. Many SFAA members own their own telescopes; some have been made by hand in local telescope-making classes and vary in size from 6 to 25 inches.

Treasurer, SFAA, POB 15097, San Francisco CA 94115

make checks payable to **San Francisco Amateur Astronomers** and mail to:

- \$10 enclosed, youth/student membership
- \$25 enclosed, individual membership
- \$30 enclosed, family or foreign membership
- \$40 enclosed, institutional membership
- \$75 enclosed, supporting membership

Select one category:

Email address:

Address:

Name: Telephone:

San Francisco Amateur Astronomers Membership Application

San Francisco Amateur Astronomers
P.O. Box 15097
San Francisco, CA 94115



Information Hotline: (415) 289-6636

Web Page: www.sfaa-astronomy.org

Sharing the Wonders of the Universe

Has your membership expired? Your mailing label includes the month and year through which your membership is paid. If it is past, your membership has expired and this may be your last issue.