

★ ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

Vol. 55, No. 12 – December 2007



**DECEMBER 19 - MEMBER'S NIGHT
MEMBER SPEAKER PRESENTATION
ASTROPHOTOGRAPHY, WRITING
AND ASTRONOMY ART CONTESTS**

**JAMES G. COTTLE, Ph.D.
BOYHOOD ADVENTURES WITH APOLLO SATURN HARDWARE
AND THE LAUNCH OF APOLLO 11**

Join me for a nostalgic trip back to the early seventies and my personal experiences working as a Ground Support Engineering Trainee for NASA Apollo at the Kennedy Space Center. It was a simpler time, when a 19 year old could find himself with open access to Kennedy Space Center, and most of Cape Kennedy Air Force Station. I will describe my adventures in programming the Pad computers with model rocket design programs, playfully pushing the launch commit signal of a Saturn 5 in Firing Room #2, getting stuck in Launch Complex 34's egress elevator, the feeling on the 320-foot level of LC-39 and experiencing the recovery of Apollo 13 from the conference room of Dr. Kurt Debus. The talk will conclude with a high fidelity, digitally remastered audio recording of the Launch of Apollo 11 from the LC-39 Press Site (the only known accurate audio archive of a Saturn 5 Launch).



Dr. Cottle received his PhD degree in Electrical Engineering at the University of South Florida in 1987 and subsequently taught there, receiving tenure and rank of Associate Professor of Electrical Engineering. He has authored over 30 papers in research journals, books and conferences, mainly in the field of electrical noise and reliability physics. His last year of teaching was at the University of California, Berkeley, after which he relocated to the Bay area and Managed Reliability Physics for Hewlett Packard's Integrated Circuit Division. His interests are wide ranging and include classical piano, woodworking, amateur radio and astronomy. Jim began his engineering career at 18 as a coop student in NASA's Apollo Program after being inspired by witnessing the launch of Apollo 11 from the KSC press site as a radio correspondent for WQXM radio in Clearwater, Florida c.a. 1969).



In addition to casting their ballot for officers and board members and before the talk begins, members attending the December meeting judge the submissions for the Art, Astrophotography, and Writing Contests. Contest Winners are announced at the Member's Dinner in January, where beautiful hand-made awards made by Linda Mahan are presented for First, Second and Third prizes in the Art, Astrophotography and Writing competitions. Enter the contests and plan to join your fellow SFAA members for the Awards Dinner. Your participation enriches the experience of SFAA.

2007 CLUB OFFICERS & CONTACTS

<i>President</i>	Kenneth Frank	president@sfaa-astronomy.org
<i>Vice President</i>	Jorge Morales	vicepresident@sfaa-astronomy.org
<i>Secretary</i>	Stefanie Ulrey	secretary1@sfaa-astronomy.org
<i>Treasurer</i>	Vivian White	Treasurer1@sfaa-astronomy.org
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	Phil Estrin	editor@sfaa-astronomy.org
<i>Associate Editor</i>	Annette Gabrielli	
<i>Telescope Loans</i>	Pete Goldie	(415) 206-9867
<i>Honorary Director and Board Member Emeritus</i>	John Dobson	(415) 665-4054
<i>Board Members</i>	John Dillon	(415) 332-8096
	Robert English	(415) 383-6475 Citystarparty1@sfaa-astronomy.org
	Annette Gabrielli	
	Dirk Lammerts	(415) 242-1464
	Elan Morpurgo	(415) 242-1464
	Michael Portuesi	(415) 550-9366
	Peter Schumacher	(415) 566-6864
<i>Alternate Board Members</i>	Joe Amato	Web-master@sfaa-astronomy.net
<i>Webmaster</i>	Lon Carter	
	Joe Amato	Web-master@sfaa-astronomy.net

CLUB TELESCOPES

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/Ken Frank president@sfaa-astronomy.org
- 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

CLUB 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

Membership is billed for each upcoming year on June 30. Members may receive no more than one bulletin after the expiration of membership.

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 Editor@sfaa-astronomy.org.

FOCAL POINT

For all you armchair observers, this is the December 19 meeting is THE ONE to attend as there are lots to observe and visually enjoy. Cast your vote at this meeting for the first, second and third place winners from almost a dozen submissions in the Astrophotography Contest and some excellent submissions in the Writing Contest. Making your decisions might be just about as challenging as it was for the contestants to create their breathtaking astrophotos and outstanding articles!

And hold on to your seat cushions for the Apollo 11 blast off! Jim Cottle's presentation is sure to give us a special insider's view and feel of the Kennedy Space Center at the time of the Apollo launches.

Oh, and don't forget our expert lecturers, John & Michael, and their Lunar Lecture at the City Star Party on Saturday the 15th.

Last week John Dillon of Randall Museum was off looking for stars in broad daylight ... the Michelin kind. He's seeking gastronomic vs. astronomic delights. Ah, to be retired.

While Comet Holmes is sadly fading, Mars is taking center stage. Last night after chatting with Michael and Lynn Kran, Bing Quock and Katie Berryhill and hearing Dean Series speaker Brother Guy Consolmagno speak about the porosity of asteroids and comets, I walked outside of the Jewish Community Center and paused by the MUNI bus stop, looked up and saw the Waning Gibbous Moon showing off Ares (Greek for Mars). Our month of March comes from the word "Mars." The first spacecraft of, my guess, many more to come was Mariner 4 in 1965. Now we've got Spirit and Opportunity http://marsrover.nasa.gov/mission/traverse_maps.html outliving their expected three months to 50 and counting. Soon to be joined by Spacecraft Phoenix, which was launched this August, 2007, is one-third there and due to arrive May 25, 2008. But for now, just take a look at the red planet. It has doubled in size. OK, so it's not like our 2003 closest encounter, but if you're a Marsatic like me, it's exciting to see and to show off at the City Star Party or from the sidewalk near you. Akkana Peck always does an incredible job of telling you "what's up" in the Solar System. Check out the SJAA newsletter Ephemeris and Akkana's column *The Shallow Sky* <http://ephemeris.sjaa.net/0712/e.html>

A few days ago as I was about to cross the Golden Gate Bridge, just coming out of the rainbow tunnel I watched with amazement, the rising Sun disappear in what looked like gnocchi pillows in a marinara sauce. Sometimes the fog does wonderful things.

Gifts for the holidays: RASC calendars, observer handbooks and beginners guides for sale at our December 19th meeting.

Dr. Nick Kanas lecturer, author and SFAA member has a new book out entitled "Star Maps." The deceptively simple title hides this plethora of knowledge and beauty of celestial atlases and prints, many in Nick's personal collection. I'll bring my copy to the meeting as well.

See you in the Randall Theatre.

KEN FRANK
President

IMPORTANT DATES

SFAA GENERAL MEETINGS & LECTURES

SATURDAY, JANUARY 19 – ANNUAL DINNER

Wednesdays
February 20
March 19

*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

*Tuesdays
January 8
February 12
March 11*

*7:00-8:30 p.m.
Randall Museum, 199 Museum Way
(Near 14th Street and Roosevelt)*

MT TAM STAR PARTIES – SPECIAL USE PERMIT – MEMBERS ONLY

Special Use Permit observing nights on Mount Tamalpais are private and 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).

VOLUNTEERS ARE ALWAYS NEEDED

SATURDAYS

January 5 – 5:05 p.m.
February 9 – 5:42 p.m.

March 8 (Messier Marathon) - 6:11 pm

CITY STAR PARTIES - Telescope Clinic one hour before sunset

VOLUNTEERS ARE ALWAYS NEEDED

Saturday, October 20, 6:19 p.m. at Land's End (Point Lobos)
Saturday, November 17, 4:51 p.m. at Land's End (Point Lobos)
Saturday, December 15, 4:46 p.m. at Randall Museum

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 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.

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



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

Vivian White, Treasurer,

treasurer@sfaa-astronomy.org.

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



San Francisco Amateur Astronomers

SFAA
P.O. Box 15097
San Francisco, CA 94115

BALLOT

2008 OFFICERS AND BOARD OF DIRECTORS

OFFICERS

- _____ President
- _____ Vice-President
- _____ Secretary
- _____ Treasurer

Vivian White

_____ Write-in

Name and office

_____ Write-in

Name and office

BOARD OF DIRECTORS

- _____ Joe Amato
- _____ Lon Carter
- _____ Jim Cottle
- _____ John Dillon
- _____ Robert English
- _____ Kenneth Frank

- _____ Dirk Lammerts
- _____ Jorge Morales
- _____ Elan Morpurgo
- _____ Stephanie Ulrey
- _____ Jarrad Wilson

_____ Write-in

Name

_____ Write-in

Name

VOTING INSTRUCTIONS

The club members listed above are candidates for Officers and Board of Directors of SFAA for the year 2008. Please vote for a total of four officers and a total of seven board of directors including write-ins. ***Voting for more than four officers or for more than seven board members per ballot will invalidate the entire ballot.*** Family memberships may submit a separate ballot for each voting family member. Write-ins for officers must include the candidate's name and office for which he or she is nominated.

All candidates, including write-ins, must have committed to attending at least seven board meetings and may not miss more than two consecutive meetings during the calendar year for which they are nominated.

The seven board of directors' candidates who receive the highest number of votes will become regular board members. The two candidates receiving the next highest number of votes will become alternate board members. The new Officers and Board of Directors will be installed at the Annual Awards Dinner on January 19, 2008.

Please return your ballots to: SFAA Secretary, at the address above.

***Ballots must be received no later than the general meeting on
Wednesday, December 19, 2008.***

San Francisco Amateur Astronomers

P.O. Box 15097

San Francisco, CA 94115



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Information Hotline: (415) 289-6636

Web Page: www.sfaa-astronomy.org

Sharing the Wonders of the Universe

San Francisco Amateur Astronomers

Annual Awards Dinner

Saturday, January 19, 2008

6:00 p.m. - No-host Bar 7:00 p.m. - Dinner

DELANCEY STREET RESTAURANT

600 Embarcadero, San Francisco CA 94107

(415) 512-5179

\$30.00 per person

Tax and gratuity included

MENU

Corn Chips and Salsa Cruda

Baskets of Onion Rings

Organic Field Greens with Balsamic Vinaigrette

Served with Baskets of Assorted Breads

Please select from the following entree choices –

Oak Fired Barbequed Chicken and Baby Back Ribs with collard and mustard greens

Mediterranean Vegetable Platter

Spinach and feta phyllos, over minted cucumber yogurt sauce, apricot spiced Israeli couscous, baba ganoush, hummus, olives, and pita bread

Dessert

Coffee or tea

PLEASE SEND A CHECK OR MONEY ORDER MADE OUT TO SAN FRANCISCO AMATEUR ASTRONOMERS ALONG WITH YOUR CHOICE OF ENTRÉE, TO SFAA AT P.O. Box 15097, SAN FRANCISCO CA 94115 BY FRIDAY, JANUARY 11, 2008.

ANY REQUESTS RECEIVED AFTER THIS DATE CANNOT BE GUARANTEED.

FROM HIGHWAY 280: TAKE HIGHWAY 280 NORTH TOWARD CIVIC CENTER/BAY BRIDGE. TAKE LEFT RAMP ONTO KING ST AND PROCEED 1.0 MILE. CONTINUE ON THE EMBARCADERO, GO 0.4 MILE. MAKE A U-TURN AT BRANNAN ST. ONTO THE EMBARCADERO, ARRIVE AT 600 THE EMBARCADERO, ON THE RIGHT.

FROM HIGHWAY 101 (SOUTH OF SAN FRANCISCO): TAKE US-101 NORTH TO THE I-280 EXIT TOWARD PORT OF SAN FRANCISCO, GO 3.2 MILES. TAKE LEFT RAMP ONTO KING STREET, GO 1.0 MILE. CONTINUE ON THE EMBARCADERO, GO 0.4 MILE. MAKE A U-TURN AT BRANNAN ST. ONTO THE EMBARCADERO, ARRIVE AT 600 THE EMBARCADERO, ON THE RIGHT.

FROM MARIN COUNTY: TAKE US-101 SOUTH OVER THE GOLDEN GATE BRIDGE. CONTINUE ON RICHARDSON AVENUE, GO 0.2 MILES. CONTINUE ON LOMBARD STREET, GO 1.1 MILES. TURN LEFT ON VAN NESS AVENUE, GO 0.2 MILES. TURN RIGHT ON BAY STREET, GO 1.1 MILES. TURN RIGHT ON THE EMBARCADERO, GO 1.9 MILES. ARRIVE AT 600 THE EMBARCADERO, ON THE RIGHT.

ASTRONOMY LITERARY CONTEST

Members attending the December meeting judge the submissions for the Art Contest. Winners are announced at the Member's Dinner in January, where beautiful hand-made awards made by Linda Mahan are presented for First, Second and Third prizes in this competition.

Revisited: Genesis of Astronomical Interest

Jim Webster

It was long ago and far away in another time and place. Much time was spent in the great outdoors. Crime and poverty didn't seem to exist. Homes had expansive lawns and large front porches that were in frequent use by their occupants. Backyards were used extensively at night in the summertime to watch multitudes of fireflies and the Milky Way under dark clear skies.

Across the street from where I lived were undeveloped lots used as a park and planted as a jungle forest. My friends and I often cared for God's beloved small creatures, stray cats and dogs, there. We frequently visited gracious neighbors and their beautiful gardens, and open fields nearby seemed to beckon us to run upon them. We were a privileged and coddled lot, my friends and I.

My father was an avid and rugged outdoorsman. We had many overnight fishing trips with blankets spread by the creek bank under open skies.

My mother, who was a brilliant and joyful person, seemed to know everything. She would patiently point out the constellations to me and tell me the names of various bright stars. She would have to tell me this frequently because the sky appeared to move and though I was fascinated, I would forget. She told me fascinating and intricate stories about ancient myths that past civilizations believed regarding the constellations. This held a deeply moving spiritual impact upon me.

Optical augmentation or enhancement by the use of a telescope or binoculars in such a dark but brilliant sky never occurred to me. It would seem distracting in retrospect when we had this beautiful canopied dome to view.

Later, there were social and technological waves of revolution in the form of air conditioning and televisions, which radically changed our way of life. Rarely did we look up at the night sky or think about it. People in large cities had never even seen the night stars. Our spiritual life seemed to falter. There didn't seem to be pertinent needs to even know what phase the moon was in or to know the Judaic holidays, which are based upon moon phases.

There have been many astronomical happenings that I found impressive. These included unexplained mysteries, such as formations of large green balls of light rapidly moving in the night sky and explosions of blinding light in the dark sky, among others. In the realm of the more easily explained physical phenomenon, I have seen massive meteoric fireballs seemingly explode immediately overhead, visual impacts upon Jupiter, huge bright comets and meteor storms. Once after leaving a deathbed scene at one of our great Midwestern hospitals, I stopped on my drive to the family home at a farm once owned by old friends, now a wildlife refuge, and walked into a darkening field replanted with native buffalo grass and found myself surrounded by literally millions of fireflies brilliantly lighting my path and the new moon dark sky.

As interesting and impressive as I found these astronomical events and others, none of these approximated the spiritual, emotional, intellectual or plainly visceral impact and indelible impressions as the gestalt of my genesis of astronomical awakening in my early childhood. I remember the fascination of the romance, poetry and physics that the night sky held for me as I stood there amazed, gazing at the wondrous glories of our heaven.

The One-Handed Astronomer

Elan Morpurgo

It all started as a sort of a joke. I was wondering what to get my wife for her birthday some five or six years ago. As usual, I hadn't a clue. But I had some spare time on my hand and some loose change rattling in my pocket. So on one sunny autumn afternoon, I found myself heading to the mall.

As the saying goes: Never send a man by himself to a shopping center for you never know what he'll come back with. On this particular occasion, I returned home from my hunting expedition with a rather large and colorful box, which I proudly presented to my wife. She spent a couple of minutes unpacking it and admiring its contents before announcing that even though the idea was noble and the intention (she was sure) pure, I had, in fact, just bought myself a telescope!

What can a 'true man' do when confronted by such strong emotions? Should he kneel on the floor and beg for forgiveness? Should he swallow his pride and hurry back to the mall and try his luck again?

No, no way! Our macho man was not about to humiliate himself in private and most surely not in public. As I saw it, there lay before me only two good options: either commit Hara-kiri right there on the spot or become an astronomer. Having a strong (some would say insatiable) will to live as well as a strong aversion to blood; I chose astronomy to be my *métier*, though, in hindsight, I might have done myself a favor by choosing option "A".

As you can imagine, things deteriorated rather rapidly from there. I found myself standing on the roof of our house night after night squinting at the heavens through my new toy. And what a wonderful toy it was! With its three and a half inches of aperture, one eyepiece, whizzing plastic gears and electronics, my little ETX-90 was a real thing of beauty, probably meant more to be looked at rather than through. Still, I was convinced that the universe was about to reveal its secrets to me instantaneously, not withstanding my sheer foolishness, and total lack of knowledge in anything remotely astronomical. Not to mention a myriad of other annoying details such as the grove of oaks that hid a good chunk of the night sky, the bright light emanating from my neighbors window, and the ball of whitish haze that dominated the one treeless horizon in the direction of San Francisco. Still, in spite of all odds, or maybe because of them, I was having a blast seeing my first star clusters and nebulas.

Since I was basically clueless, I turned for help to the trusted instruction manual. One piece of advice that caught my attention was: "Join an astronomy club, attend a star party." Well, this sounded like sage advice. There may be others like me standing on other rooftops seeking to solve the same eternal questions: Who are we and what are we doing here?

So it happened that I became a card-carrying member of the San Francisco Amateur Astronomers. No longer did I have to observe alone. I bid good-bye to my perch on the roof with its obstacles and limitations and, in the company of my newfound friends, started observing from the flanks of venerable Mount Tam that suffered from most of the same obstacles and limitations sans my neighbors' annoying bright light. One quick glance at my fellow astronomers was all I needed to convince me that I was in a league of my own, and a very minor league at that. Surrounded on all sides by telescopes the size of the Transamerica building, me and my mini-scope felt like imposters.

If I was to hold my own, a return trip to the mall started to look more and more inevitable. Should I confront my demons and ask the same salesperson that only a short while ago told me without blinking an eye that my scope is "all I'll ever need" to sell me a bigger and better one that will allow me to join the telescope lineup on the mountain without being the laughing stock of the club? Should I demand a written guarantee that it is indeed "all I'll ever, ever, ever need"? After much internal debate and in order to avoid any chance of more humiliation at the mall, I went on-line and ordered a new scope from a dealer on the other side of the continent.

My new 8-inch Meade go-to scope was indeed all I ever needed or dreamed about (at least for a while). It certainly gave me a dose of respectably I so urgently needed and the heavens started to look a tad more like what I saw when I briefly glanced through other peoples' scopes. Even though there remained a few purists that found it annoying to listen to the not-so-soft hum of the telescope gears in the stillness of the night, I knew I was in the 'groove.' Many of the celestial objects that beforehand were beyond or just barely visible, suddenly came into sharp focus. Not only the new scopes but also a seeming endless stream of add-ons and gadgets (to bolster my self-image) made astronomy so much more enjoyable and fun. The days of few eyepieces were long gone and it seemed like there was always something else to acquire that will make the experience 'perfect.' I felt as though I had finally arrived. The only obstacle to having a perfect night of observing was, as the saying goes: location, location, location!

So, each summer I joined the 'mass migration' of amateur astronomers that, like the now extinct herds of buffalo that once moved across the prairies, roam the backcountry looking for the perfect dark sky. From Lake Sonoma to Shingletown at the foot of Mount Lassen, on to the Oregon Star Party at the remote high desert of central Oregon, to the California Star Party at Lake San Antonio in southern Monterey County, I plied my trade. Some of those pitch-dark, star-filled nights under the glow of the heavenly river of milk, were indeed both spectacularly beautiful and awe inspiring. They were the hours and minutes that gave the whole enterprise of Amateur Astronomy its significance and true meaning.

Two full years with an eight-inch scope for a 'true', red blooded, and still eager astronomer is two years too long. Aperture fever was settling in once again with no relief in sight -- until I checked the for-sale ads and found myself a ten-inch monster that I hoped would calm my fervor. I drove halfway to L.A. and returned home that same day in the pouring rain with my new 'fat baby'. It went on raining for day after day until it was time for me to go back to Israel to visit my family and friends without ever having a chance to use my new scope.

I returned home three weeks later all ready and eager to finally go out and find out what I had got. But it wasn't to be: three days after my return, catastrophe struck in the form of a major stroke that happened during the night.

This time I found myself in the hospital instead of on a mountain and after five days in the intensive care unit, I was farmed out to a rehab facility where all they could do to help was to introduce me to the wonderful contraption named a "wheel chair" and provide me with a plastic brace for my lame leg. Once or twice a day, the nice doctor came by to confirm that I was still mostly alive even though my right side was completely paralyzed and I could hardly speak or make much sense.

But even during those horrific first weeks astronomy was not totally forgotten. The best place at the rehab center was an outdoor patio where one could escape the hospital-like atmosphere. It was on this patio that my new friend the wheel chair and I spent most of our 'spare' time. One evening, after what must have passed for dinner, I went outside to enjoy the mostly obscured view of the setting sun when the security guard on duty passed by and, without looking, locked the door behind me. I was left outside in the gathering darkness to do what I craved most: a star party for one!

That was nearly two years ago. Since then not a whole lot has changed, even though many who know me well will beg to differ with this, somewhat gloomy, assessment. My right hand is still mostly non-functional and my leg is still in a brace. But I can speak, oh boy can I speak. By trial and error and a lot of stubbornness and perseverance, I have taught myself how to manage with only my left hand. To my great surprise and delight even my telescopes can be managed and operated with one hand alone.

As to astronomy, not a whole lot has changed either. Most of the stars are still twinkling in their places, as far as I can tell. On moonless nights, you can still find my astronomy buddies and me stargazing on Mount Tam through my telescope though, surely, with a renewed sense of awe and appreciation.

FROM A DREAMERS PEN

Cheryl Schudel

It's spring and we're all aglow as we see the heads of the seven sisters go.
Ancient sailors rained upon by Merope's tears, dance in joy at the beginning of a New Year.
Leo roars shaking his mane of long hair, his Regulus heart set on Virgo so fair.
And Venus comes and Venus goes and where she hides we do not know.
Down to the plutonic world to visit Chiron her icy lover, or up to Io her eruptive brother.

Summer, the swans afloat, followed close by an old sea goat.
Lyra the harp a ring in his strings, stays far away from Scorpio's stings.
The beehives abuzz with droplets of dew
Midsummer's dream tells me half the years through.

And Venus comes and Venus goes and where she hides we do not know.
At the altar she bestows her wishes that Deimos and Phobos make up with kisses.

Fall, as time seems to slow,
Skies full of water creatures show.
Days are shorter, and shadows grow.
Mars goes retrograde; it's true,
There's so much left to do.
Long nights, Beaver moon reigns full with light
Farmers gather reap and sow from the seeds they plant below.

And Venus comes and Venus goes and where she hides we do not know.
Behind the sun she hides for a season, until sweet Sirius lures her out with reason.

Winter and Orion the mighty hunter, his belt jewels sparkling like glass
Has a sharp sword created mostly of gas.
His red-eyed tormentor charges toward the galactic center.
Black hole there we're told, will let us pass, or take firm hold.

By gravity pulled the shortest day arrives, and then God bless us all, we make it to the other side.
We're slung around the galactic core, and through the veil of Cassiopeia's mighty door.
Looking back and forth in her mirror alone, leaving the old year behind she welcomes us home.

And Venus comes and Venus goes and where she hides we do not know.
Three times we curtsy before her crescent face.
Grant us favor to some day rise and sit beside her place.
The first the last forever be, the one we commit to memory.

APOCALYPTO-APOCALIMPO-APOCALIMBO-APOCABIMBO - 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!



ASTROPHOTOGRAPHY CONTEST

Members attending the December meeting judge the submissions for the Art Contest. Winners are announced at the Member's Dinner in January, where beautiful hand-made awards made by Linda Mahan are presented for First, Second and Third prizes in this competition.



Jared Wilson #1
Flame Nebula

12/1/2007 - Oakland, CA x6 5 min exp for luminosity; x3 5 min exposures for red & blue; x1 5 min exposure for green Captured in Equinox Image; calibrated in MaximDL; post processed in Photoshop CS2 Losmandy GM-8 Mount; FLT-110 APO; SBIG STL-11000M camera



Jared Wilson #2
Horsehead Nebula

12/1/2007 - Oakland, CA x6 5 min exp for luminosity; x3 5 min exposures for red & blue; x1 5 min exposure for green Captured in Equinox Image; calibrated in MaximDL; post processed in Photoshop CS2 Losmandy GM-8 Mount; FLT-110 APO; SBIG STL-11000M camera



Cheryl Schudel #1 - Mt Tam Sunset



Cheryl Schudel #2 - Milky Way



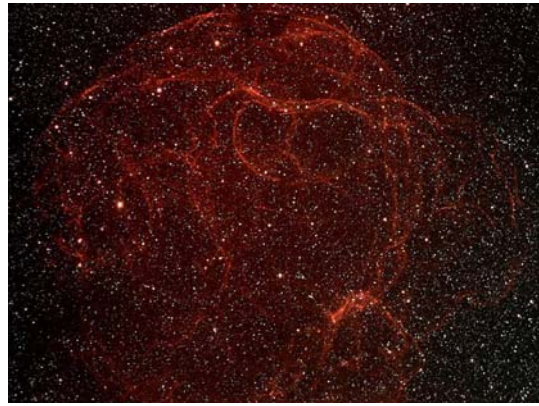
Cheryl Schudel #3 - Orion Nebula



Norman Mahan #1
Rosette Nebula
12" Astro Systeme Austria 12" w/ AstroDon filters & SBIG 6303



Robert Berta #1
 Sharpless II #157 close to Bubble Nebula
 Taken w/ narrow band filters Ha, SII, OIII.
 (odd colors which represent different emission
 bands). Photo taken Spring from Cadillac
 Michigan.



Robert Berta #2
 Sharpless II #240 aka Simeis 147 in Taurus and
 near Elnath.
 Taken in winter.



Robert Berta #3
 Sharpless II #115 and Abell 71 in Cygnus near
 Deneb; the small round planetary is Abell 71.
 Taken summer from Cadillac, Michigan and
 Macomb, Michigan



Phil Lau
 Shooting Stars



Jared Willson #3
 Western end of Veil Nebula known as NGC
 6960, but less formally as the Witch's Broom
 Nebula

Your First Telescope

Michael Portuesi

A guide to buying your first telescope.

Excited by the world of astronomy? Thinking of buying a telescope, perhaps as a gift for the kidlet?

Glad I got to you in time. Your choice of a first scope is a crucial one that can literally make the difference between astronomy as an enriching and lifelong hobby, or spent exercise marked by a piece of junk collecting dust in a closet.

The good news is that despite the bewildering array of choices, it's not that hard to choose a first telescope. In fact, when shopping for your first scope, it is most important to know what *not* to buy.

Buy from Telescope Shops, not Department Stores

I'll begin with the single most important piece of advice for getting a good telescope: **DO NOT BUY A TELESCOPE IN A DEPARTMENT STORE.** Just don't do it. If you follow only one piece of advice from this article, this is it.

Cheap department store telescopes are a waste of money. That includes scopes you see on cable TV shopping channels, at most photo stores, hobby stores, electronics chains such as Fry's, Circuit City, and Best Buy, as well as mall specialty stores such as "The Science Shop", "The Nature Channel Store", and the like.

So, where *should* you buy a telescope? That's easy - from a store that specializes in telescopes. In the San Francisco Bay Area, [Scope City](#) in San Francisco and [Orion Telescopes](#) in Cupertino are both excellent choices. If you do not live near a telescope store, you should consider ordering online from a place which specializes in telescopes.

Here's an easy rule of thumb: **Do not buy any telescope that is marketed on the basis of magnification.** That is a certain sign the scope is a mass-market, poorly built instrument that will drive you away from the hobby. Contrary to what common sense might lead you to expect, magnification is not all that important when selecting a telescope.

Why is Magnification not Important when Selecting a Telescope?

Magnification isn't the most important thing that a telescope does. In fact, you might be surprised to discover that experienced amateurs don't consider magnification very much when they shop for a new telescope.

There are two reasons for this:

1. The magnification is changeable. All telescopes use removable, interchangeable eyepieces. By removing one eyepiece and inserting another, I can get any magnification I want. I can use a low magnification eyepiece for star clusters like the Pleiades, or a high magnification eyepiece in order to view subtle details on the planets or the Moon. So you can get just about any magnification you want on any telescope. Whether or not high magnification is usable on a given telescope is another story.
2. The most important determining factor for a scope's resolving power is its *aperture*, or the diameter of its main optical element (called the *primary*). Depending on the type of telescope, this is either a lens or a mirror. The larger a telescope's aperture, the more light it collects, and the more detail it can show. High magnification with a small (low-aperture) telescope can often present a blurred image with no visible detail. That is because the high-magnification eyepiece simply magnifies a mushy image from the main telescope optics. The primary optics aren't big enough to resolve a more detailed view. Professional telescopes are huge, elaborate constructs permanently mounted in big observatories. In the world of telescopes, bigger is better.

Consider Binoculars Before a Telescope



Instead of getting a telescope first, why not go with a pair of binoculars? That's how I got my start in astronomy.

You can buy a good pair of astronomy binoculars for *less than \$100*. This is a great introduction to astronomy if you're on a limited budget. Or maybe you already have a pair, in which case you can get started for free!

Binoculars are a big step up in viewing power compared to the naked eye, and give you a chance to learn the night sky. They will show you the Moon, comets, the moons of Jupiter, star clusters, double and variable stars, nebulae, and even some galaxies. They offer wide fields and a view oriented the same

as you see with the naked eye. This makes finding things with binoculars much easier than with a telescope. And believe it or not, some objects in the night sky often look better through binoculars than they do through telescopes! Comets are but one example.

If you find that you don't like astronomy, you can use your binoculars for lots of other activities, such as hikes, nature, ballgames, etc. If you like astronomy and want to go further, you will still find the binoculars useful as an observing tool to complement your telescope. Nearly every experienced amateur astronomer has at least one pair of binoculars in their stable of observing equipment.

While you learn the night sky with your binoculars, you can research the various types of telescopes and what might interest you. You might also save up the necessary funds. At some point - and you will know when that is - you will be ready to take the next step and purchase the telescope of your dreams.

To get started with binoculars, check out these sites:

- [Binocular Astronomy Resource Page](#)
- [Sky and Telescope's Guide to Telescopes and Binoculars](#)

But I Really Want a Telescope!



Despite my suggestion to start small with binoculars, most beginners won't want to hear that advice. They want to get started doing "real" astronomy, and of course "real" astronomy involves using a telescope.

So knowing that you're really itching to get started with a telescope, here's a rundown of the different types of telescopes you might find in an astronomy store.

Telescope Optics

The vast majority of telescopes you find on the market will fall into one of three (or four, depending on how you classify them) different types.

Refractor Telescopes

The *refractor* telescope is what most non-astronomers think of as a "telescope". It has a long, tapering tube with a big lens on one end and an eyepiece on the other end that you look into. Light goes into the lens, through the scope, out the bottom and into your eye. Refractors are further broken down into types according to the level of color correction they offer. "Achromatic" scopes offer a reasonable amount of color correction, but can display blue or purplish halos around bright objects such as the Moon or planets. "Apochromatic" scopes incorporate more lens elements and exotic glass types to offer

high degrees of color correction, for crisp views. And there is a third type, "semi-apochromat", describing a scope with better color correction than most achromats, but not to the color-free level of apochromatic scopes.

As you would expect, apochromatic scopes cost more than semi-apochromats, and significantly more than achromatic scopes.

The advantage of a refractor telescope is the level of contrast, crispness and detail available in the image. Refractors are superior to all other telescope designs at the same aperture. But they also cost the most to make, and they are simply not available in larger apertures (above 6 inches) that other optical designs offer.

Some good manufacturers of refractor telescopes include:

- [Orion](#). The Orion ED-80 apochromat is a fantastic value and an excellent first telescope. Or consider the venerable ShortTube-80 (shown in photo, situated on a lightweight [alt-azimuth mount](#)) for an inexpensive, easy-to-use, achromatic scope that delivers wide-field views.
- [StellarVue](#). The Nighthawk series is a good starting point for beginners.
- [William Optics](#). The ZenithStar scopes offer high quality and excellent value.
- [Tele Vue](#). If you have lots of money to spend, Tele Vue scopes have exquisite optics.



Reflector Telescopes

Unlike refractors, *reflector* telescopes aren't immediately recognizable to non-astronomers. They look like long cylindrical tubes sitting on tripods, or Lazy-Susan style mountings that resemble cannons.

Reflector telescopes also don't feature a lens facing the sky. Instead, they use a large mirror mounted at the bottom of the tube to collect and focus light. A second, much smaller mirror mounted at the sky-facing end of the tube deflects the light out to an eyepiece at the side of the tube, where the viewer looks into the scope.

Reflector telescopes inherently have perfect color correction. Because the optics are relatively simple, they can also be built in larger apertures for less money than any other type of telescope. In fact, all professional observatories now use reflecting telescopes of some form or another.

Because the main mirror can be very large (mass-market reflector scopes go out to 16-inch diameter mirrors and specialty telescope makers offer sizes twice as wide), it has more surface area to collect more light. This additional light-collecting ability can pull in fainter objects such as nebulae and galaxies, and it can often tease out additional detail when viewing celestial objects.

However, reflectors do have their downside. The small, secondary mirror does block the light path, creating a shadow on the main mirror that is distributed throughout the view you see in the eyepiece. So reflectors typically don't offer the contrasty, pin-point view that is so typical of a refractor telescope. They also can be large and difficult to transport, unless you spend more money on fancier designs that break down and fold for transport in a car or truck.

Some good manufacturers of reflector telescopes include:

- [Orion](#). The Intelliscope series of Dobsonian-style reflector telescopes sold by Orion are probably the best way for any beginner to get started in astronomy.
- [Meade](#). Meade offers the LightBridge Dobsonian-style reflectors, which break down for easy transport.
- [Parks Optical](#). Parks makes nice, traditional tripod-mounted equatorial reflectors.



Compound Telescopes

The *Schmidt-Cassegrain* telescope, and its close cousin the *Maksutov-Cassegrain*, are examples of *compound* telescopes. Compound scopes (also called *catadioptric* scopes) combine both lenses and mirrors. You can spot them easily due to their short, stubby cylindrical shape.

Compound scopes provide good optical performance at a decent cost with small size and excellent portability. For these reasons, they are very popular with amateur astronomers. For a long time, the 8-inch Schmidt-Cassegrain scope (shown here in photo) was the ideal starter scope for the serious amateur astronomer, and today it remains an excellent choice.

The main disadvantage of compound telescopes is somewhat similar to reflectors, only more so. Compound telescopes also have a secondary mirror obstructing their light path, and typically it is larger in relation to the size of the scope than with reflectors. So given a refractor, a reflector, and a compound telescope all of the same size, the compound scope will typically have the least contrasty and detailed images. Still, a well-made compound telescope is still an excellent performer, and for many people the benefits more than outweigh any disadvantages.

Almost all Schmidt-Cassegrain telescopes are made by either Meade or Celestron. Both company's offerings are competitive with each other, so it ultimately matters what manufacturer appeals to you the most, and what kind of deals you can get.

Some good manufacturers of Maksutov-Cassegrain telescopes include:

- [Orion](#). The StarMax series of Maksutov-Cassegrains offer excellent performance and are very affordable.
- [Meade](#). The ETX 90 and 125 scopes are Maksutov-Cassegrains with a built-in computer.
- [Celestron](#). Celestron also offers Maksutov-Cassegrains with computerized mounts.

Telescope Mounts

Just as important as the scope itself is the *mount*, or apparatus that supports the telescope and allows you to aim it about the sky.

Telescopes typically work at anywhere from 30 times magnification to 300x or more. Telescopes magnify not only celestial objects, they also magnify any motions of the mount itself. If your telescope sits on a weak or rickety tripod, the view through the eyepiece will forever jiggle and wiggle from the vibrations of the mount itself, and you will never be able to get a satisfying view.

Additionally, a sturdy, accurate mount is absolutely critical for accurate aiming of the the telescope. Again due to magnification, a telescope typically shows a very small region of sky, smaller than the area of your thumbnail viewed from arm's length. If the parts are poorly machined, the mount will not move precisely and will not be able to accurately find objects in the sky, even with the assistance of a computer.

Poor-quality mounts are the major reason why mass-market telescopes sold in department stores are unsuitable for any sort of

astronomy work. Even expert astronomers can't aim them and make them work properly; what chance will you have?

There are various types of telescope mounts, but they break down into two basic types. You will find these mounts paired up with all types of telescope optics - refractor, reflector, and compound scope.

Equatorial Mounts

Every telescope mount has two axes upon which it independently turns, to allow the scope to point at any spot in the sky. An *equatorial* mount is special in that one of the rotation axes is aligned with the axis of the Earth. You do this by adjusting the angle of the axis for your latitude, then aiming the axis at Polaris, the North Star, using a sighting device (or with the Southern Celestial Pole in the constellation Octans, if you live in the Southern Hemisphere). You have to re-align the mount with Polaris each time you set it up.

Once the mount is aligned, all rotation on the north-south axis traces a precise line between east and west in the sky. This movement matches the movements of celestial objects, which rise in the east and set in the west. So an equatorial mount is very useful for automatically following celestial objects. A well-aligned equatorial mount will keep a planet, nebula or galaxy centered in the eyepiece for hours on end, allowing you the opportunity for detailed study. The ability to precisely track celestial objects also makes equatorial mounts very popular with astrophotographers.

Equatorial mounts are rated for the amount of weight they can carry yet still move and track accurately, as well as for the precision of their tracking mechanism. Naturally, the bigger and more accurate you want the mount to be, the more you will pay.

Shown here is a Schmidt-Cassegrain telescope, situated on an equatorial mount (in this case, a German Equatorial). Note the counterweight at the end of the long shaft



opposite the scope, which is typical of this design.

Alt-Azimuth Mounts

An *alt-azimuth* mount also has two axes to rotate the scope. The difference is that alt-azimuth mounts need no special alignment.

The *azimuth* axis rotates 360 degrees, from north to east to south to west, back to north. The *altitude* axis rotates 90 degrees from the horizon to straight overhead.

Unlike an equatorial mount, an alt-azimuth mount does not offer tracking capability, unless it is attached to a computer. On the other hand, it is simpler, less expensive, less bulky, drop-dead easy to set up, and drop-dead easy to use.

The most popular alt-azimuth mount is the *Dobsonian* mount, invented by John Dobson, founder of the Sidewalk Astronomers. The Dobsonian mount sits on the ground using a Lazy-Susan style turntable providing the azimuth motion. Upon this turntable rests a box providing bearings for the altitude motions.

The combination of a reflecting telescope on a Dobsonian-style mount is very popular, and is often referred to as a *Dobsonian telescope*. (Dobson prefers to call these telescopes "sidewalk telescopes").

Shown here is John Dobson peering into a modern Dobsonian reflector telescope, at the 2005 Grand Canyon Star Party. This telescope is a truss-tube Dobsonian, which is lightweight, disassembles and nests for compact transport. See our [feature on Dobsonian telescopes](#) for an example solid-tube scope built to John Dobson's original design.

What Type of Telescope is Right for Me?

Telescopes are a little like golf clubs. In the same way there's a club (driver, putter, wedge, etc) that's appropriate for a given situation on the golf course, so too are various telescopes appropriate for different kinds of observing.

It's important to keep in mind there is no such thing as a single telescope that "does it all". Each of the optical and mounting designs has its own strengths and weaknesses, which make them suitable for different kinds of use. While you can use a given telescope for any kind of observing, some work better than others. It's not uncommon for enthusiastic amateurs to own more than one telescope to suit the kinds of observing they do.

With that said, here's a few suggestions for types of scopes to consider for various types of viewing. The sizes presented here refer to the telescope's aperture, or diameter of its main optics, be they mirrors or lenses.

- **If you want to sweep the skies looking for grand views**, or you want to go comet-hunting, consider binoculars or a wide-field telescope such as an 80mm (3.5") refractor.
- **If you want to observe the Moon and planets**, consider a 100mm (4") or larger refractor, or a 6" or larger reflector telescope. Schmidt-Cassegrain scopes 6" or better are also a good choice. You can view the Moon and planets from anywhere, so they're a good choice for observing if you live in the city and do not plan to drive out to dark sky sites.
- **If you want to view bright deep-sky objects** such as star clusters, variable stars, and double or multiple stars, a refractor (80-100mm, or 3.5-4" in diameter) is the ideal instrument. They provide tack-sharp views, without requiring the extra light grasp larger telescopes provide.
- **If you want to view faint deep-sky objects** such as galaxies and nebulae, you want the largest aperture scope you can afford and transport. Look into Schmidt-Cassegrain telescopes with diameters 8" or larger, or Dobsonian reflectors 8" or larger.
- **If portability is a concern**, because you must transport the telescope to a dark-sky observing site, or you have limited storage space, consider something small. Choices could include an 80mm (3.5") refractor, a Schmidt-Cassegrain or Maksutov-Cassegrain with up to 8" mirror, a solid-tube reflector with up to 8" mirror, or a collapsing truss-tube Dobsonian reflector such as the Meade LightBridge.
- **If ease of setup/takedown is a concern**, solid-tube Dobsonian reflectors are as simple as they get - just plop it down and start observing.
- **If ease of use is a concern**, Dobsonian reflectors take the crown here too. This makes them especially well suited for beginners.
- **For beginners, alt-azimuth telescope mounts are a better choice than equatorial mounts.** They are less bulky, as well as easier to understand and use. Equatorial mounts are mainly useful for people who want to take astrophotos.



I Want to Take Astrophotos, Too.

Often, when people describe their dream first telescope, they describe the mythical telescope that "does it all", including astrophotography. They describe a scope they can use now for through-the-eyepiece views, and will accept a camera later for taking sky photos.



We covered the "does it all" scope already; sadly it doesn't exist. So as a first-time scope buyer, my advice is to not concern yourself over astrophotography, no matter how attractive the prospect may be. I know, I look at the stunning astrophotos published by amateur astronomers in books and magazines that rival Hubble photos in quality and attractiveness, and I think, "wouldn't it be cool to do that myself."

But here's the reality.

Those photos weren't made with beginner equipment. The really nice photos you see on the internet, books and magazines were made by people who have sunk five and even six figures into specialized telescopes, mounts, cameras, computers, accessories,

and software.

Also, those photos weren't made by beginners. It is no small undertaking to learn to be an astrophotographer. It requires you know:

1. Everything you have learned as a visual (eyeball-to-eyepiece) astronomer,
2. Everything you have learned as a traditional photographer,
3. And a host of special techniques for shooting and processing long-term, faint exposures.
- 4.

All three disciplines can only be acquired through experience. Successful astrophotographers spend a lot of time at what they do, learning from their mistakes and devising new and better ways to capture and process photos.

I'm not saying you can't eventually be a good or even a first-rate astrophotographer; far from it. But as a first-time scope buyer, you need to gain the skills behind it (I) at a minimum before you can move on to astrophotography. And at that point, you will be in a much better position to identify and shop for the equipment you will really need to be successful as an astrophotographer.

Basically, if you seriously want to do astrophotography you *will* end up buying new scopes and equipment, so you don't need to stress over it during your first purchase.

If you don't want to be a serious astrophotographer, and only want to dabble, you're still covered. Meade and Orion both offer low-cost astronomy cameras that attach to nearly any telescope and take decent photos of the Solar System as well as other celestial objects. The techniques you employ using these cameras are the same as those used by accomplished astrophotographers using more expensive equipment, so they're an easy and cheap way to try astrophotography as a hobby.

Since these low-cost cameras work with nearly any scope, there's similarly no reason to stress out over what you buy now. Get something and enjoy it now; let the picture bug hit you later.

Computerized (GOTO) Telescopes

As a new astronomer, you might be in the market for a "GOTO" telescope. These telescopes have built-in computers that do the work of pointing the telescope and finding objects for you. Common brands include the Meade ETX and Celestron NexStar. The manufacturers of these devices claim to make astronomy effortless.

I think GOTO is a great convenience *for experienced astronomers* - it saves them time, effort and allows them to focus on observing rather than operating their telescope. But the reality is that for beginners, computerized scopes simply substitute one set of challenges for another.

I've found some would-be beginners come to the SFAA/Sidewalk Astronomers [Telescope Clinics](#) with GOTO scopes they've never used. The first thing a computerized telescope does when you turn it on is require you to point it at some stars that you know, in order to set it up.

These beginners can't get past the computer's setup procedure, either because the hand controller is too confusing to use, or they don't know what stars to point the scope at. Since the computer is required for all aspects of the scope's operation, they never are able to use their scope.

Ironically, this situation can be much worse than beginners who start with non-computerized scopes. At least they can hand-point their scope and look at the Moon, the planets, or random places in the sky if they don't know how to find objects.

If you're the type of person that's good at figuring out computers and gadgets, then a GOTO scope might be a very good buy. If you are the type of person who has/had a VCR flashing "12:00" at home, you should consider buying a non-computerized scope, together with a good beginner's book to help you learn to find things.

Keep in mind that a GOTO telescope will *not* excuse you from actually learning your way around the night sky. You still have to know the basic constellations and bright stars in order to set it up. But just think for a moment. Aren't you getting into astronomy because you *want to learn* these things?

Most of the enjoyment of astronomy as a hobby is intellectual: knowing how absurdly far away that tiny dot you're seeing really is, or the significance of the dim, fuzzy blob appearing in the eyepiece. In fact, if you don't pick up some of the intellectual aspects of the hobby, you likely will not appreciate owning and using a telescope, because quite often what you see in the eyepiece really is a dim, fuzzy blob or a tiny dot.

Learning the layout of the night sky, and getting to know the universe over your head, can be one of the most satisfying things you do with your life. In the ideal case, what a GOTO scope will do is relieve the requirement of learning lots of this stuff up front, so that you can tackle the fine points of the night sky at your own pace. And when you do know the night sky, they can save you time and effort.

Finally, I don't recommend buying a GOTO scope in the \$500 or under range. Too much of your \$500 is going towards the computer, and not enough is going towards the scope. I've seen low-cost GOTO scopes, and the optics typically have small apertures (meaning you can't see much), with flimsy mounts containing plastic parts that wear out after a year or so of use. If you want GOTO, think at least in the \$800 to \$1000 range.



A Starter Scope Recommendation

If you're like most people, your eyes glazed over reading the very distilled summary of telescope designs and you skipped right down here to get a buying recommendation.

I often advise against buying a scope without investigating for yourself, as do many amateur astronomers. The right telescope for you is different from somebody else, and it does make the difference as to whether you will actually use it.

But still, people often ask for my recommendations. So here's mine: The [Orion Starblast](#), from [Orion Telescopes](#) (pictured here). This is by far the best buy you can get in an under-\$200 telescope, probably even under-\$400. It's perfect for kids (and adults!) of all ages, it's portable, it is simple to use due to its built-in alt-azimuth mount, and it has fine optics.

If you advance in the hobby and decide you want a fancier scope, you will *still* use this one because it is so portable and easy to use. (Several very experienced observers I know have purchased the Starblast as a second, "grab and go" scope). It comes with everything you need to get started, except a red flashlight, a good beginner's book and basic star charts.

[Starblast review](#) by my friend [Jane Houston Jones](#).

Build Your Own Telescope

If you *still* don't know what telescope to buy, you could consider building your own. The experience of seeing the universe through a telescope you built yourself, from plywood, cardboard and glass, is quite unique.

This is the path I ultimately took. After observing with binoculars for some time, and researching my options, I came to the conclusion that I was ready for a telescope. And what's more, I was ready for the experience of building my own.

To learn more about building a Dobsonian telescope, see our [Telescope Making page](#).

Appendix: For More Information

The following books have more information to assist you in your buying decisions.

[Star Ware: The Amateur Astronomer's Guide to Choosing, Buying, and Using Telescopes and Accessories](#) by Philip S. Harrington is a wonderful guide to astronomy hardware. It goes into more detail than I can offer in this article, but it stays breezy and never lets you get lost in technobabble. It also contains a quiz that you can fill out and will recommend the type of telescope that's best for you.

[Star Watch: The Amateur Astronomer's Guide to Finding, Observing, and Learning About over 125 Celestial Objects](#), also by Philip S. Harrington is a companion volume that will teach you how to use your telescope and how to find things to look at with it.

Also, check out the following websites for more telescope buying advice.

[Paul Mortfield's Telescope Buying Tips](#). Paul is an accomplished astrophotographer, formerly from the SF Bay Area.
[Purchasing Amateur Telescopes FAQ](#).
[The Heretic's Guide to Choosing and Buying Your First Telescope Recommendations for Beginning Amateur Astronomers](#)
[Some Advice on Picking an Astronomical Binocular](#)
[Astronomical Telescope Eyepieces: A Discussion for the Beginner](#)
[A Glossary for Telescope Buyers and Users](#)

Geminid Asteroid Shower (Courtesy of NASA)

http://science.nasa.gov/headlines/y2007/03dec_asteroidshower.htm

Dec. 03, 2007: Mark your calendar: The best meteor shower of 2007 peaks on Friday, December 14th.

"It's the Geminid meteor shower," says NASA astronomer Bill Cooke of the Marshall Space Flight Center. "Start watching on Thursday evening, Dec. 13th, around 10 pm local time," he advises. "At first you might not see very many meteors—but be patient. The show really heats up after midnight and by dawn on Friday, Dec. 14th, there could be dozens of bright meteors per hour streaking across the sky."

Right: A Geminid meteor in 2006 photographed by Christopher Colley of Lombard, Illinois. [[Larger image](#)]

The Geminids are not ordinary meteors. While most meteor showers come from comets, Geminids come from an asteroid—a near-Earth object named 3200 Phaethon.

"It's very strange," says Cooke. How does an asteroid make a meteor shower?

Comets do it by evaporating. When a comet flies close to the sun, intense heat vaporizes the comet's "dirty ice" resulting in high-speed jets of comet dust that spew into interplanetary space. When a speck of this comet dust hits Earth's atmosphere traveling ~100,000 mph, it disintegrates in a bright flash of light—a meteor!

Asteroids, on the other hand, don't normally spew dust into space—and therein lies the mystery. Where did Phaethon's meteoroids come from?

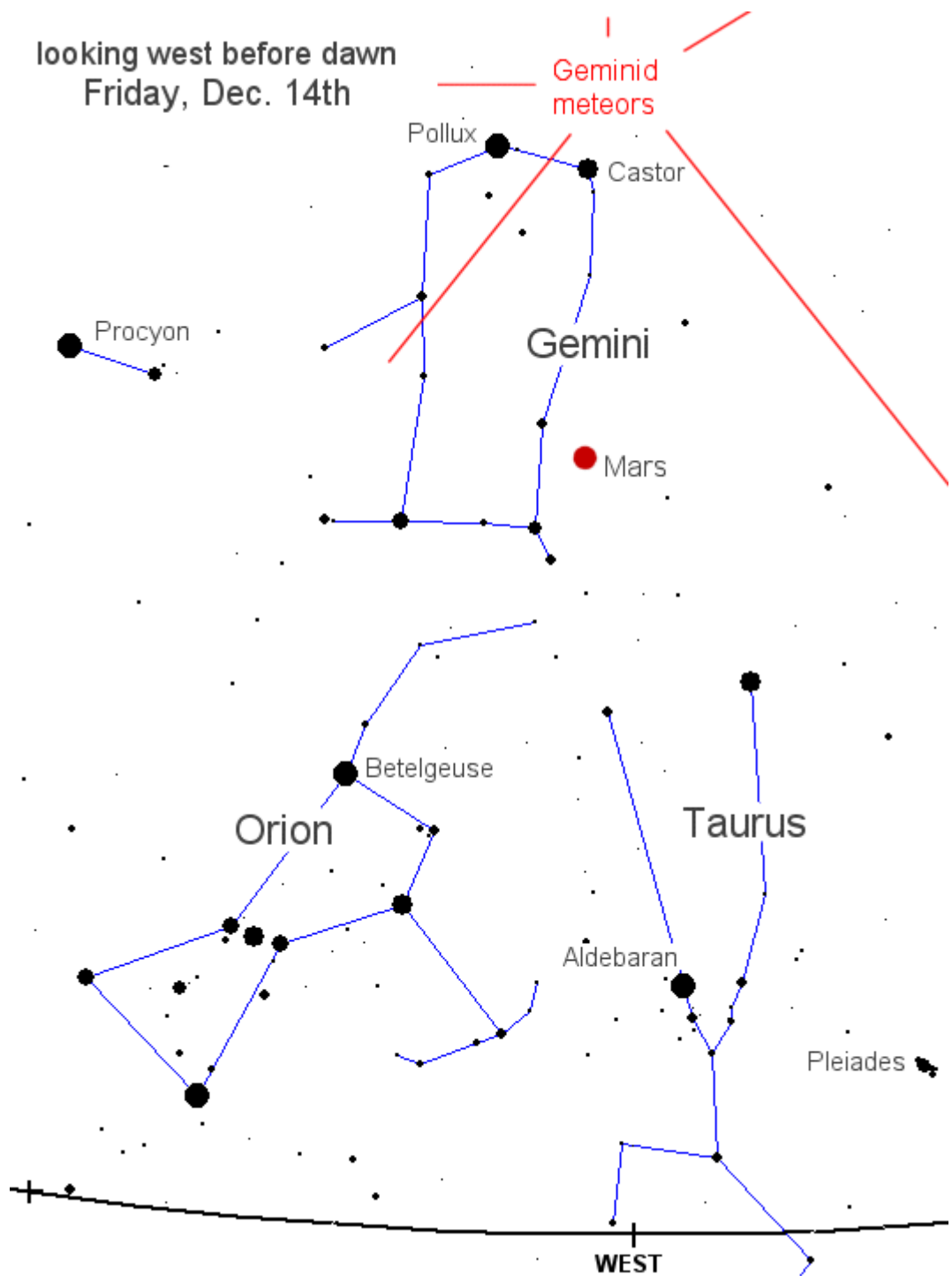
One possibility is a collision. Maybe it bumped against another asteroid. A collision could have created a cloud of dust and rock that follows Phaethon around in its orbit. Such collisions, however, are not very likely.

Cooke favors another possibility: "I think 3200 Phaethon used to be a comet."

Exhibit #1 in favor of this idea is [Phaethon's orbit](#): it is highly elliptical, like the orbit of a typical comet, and brings Phaethon extremely close to the sun, twice as close as Mercury itself. Every 1.4 years, Phaethon swoops through the inner solar system where repeated blasts of solar heat could easily reduce a flamboyant comet to the rocky skeleton we see today.

If this scenario is correct, Phaethon-the-comet may have produced many rich streams of dust that spent hundreds or thousands of years drifting toward Earth until the first Geminid meteors appeared during the US Civil War. Since then, Geminids have been a regular shower peaking every year in mid-December.





3200 Phaethon is now catalogued as a "PHA"—a potentially hazardous asteroid whose path misses Earth's orbit by only 2 million miles. It measures 5 km wide, about half the size of the asteroid or comet that wiped out the dinosaurs 65 million years ago, and can be seen through backyard telescopes—in fact, now is a good time to look:

"3200 Phaethon is flying past Earth just a few days before this year's Geminid meteor shower," notes Cooke. On Dec. 10th, Phaethon will be about 11 million miles away shining like a 14th magnitude star in the constellation Virgo: [ephemeris](#). That's too dim for the naked eye, he says, but a good target for amateur telescopes equipped with CCD cameras.

Cooke doesn't expect the flyby to boost the Geminids—"11 million miles is too distant to affect meteor rates"—but the Geminids don't really need boosting. "It's always a great shower," he says. "Don't miss it."

SFAA 2008 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 observe privately from 11 pm-2 am. SFAA's access to SUP private events (below) is contingent on our support of the Mt. Tam public events.

- May 10, sunset 8:09 pm
- June 7, 8:30 pm
- July 12, 8:32 pm
- August 9, 8:09 pm
- September 6, 7:31 pm
- October 4, 6:47 pm

Mount Tam SUP Events

Special Use Permit observing nights on Mount Tamalpais are private and 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 5, 5:05 pm
- February 9, 5:42 pm
- March 8 (Messier Marathon), 6:11 pm
- April 5, 7:37 pm
- May 3, 8:02 pm
- May 31, 8:26 pm
- July 5, 8:35 pm
- August 2, 8:17 pm
- August 30, 7:41 pm
- September 27 (Annual Picnic), 6:58 pm
- October 25, 6:18 pm
- November 29, 4:51 pm
- December 27, 4:58 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 12 (LE), 5:11 pm
- February 16 (LE), 5:49 pm
- March 15 (RM), 7:17 pm
- April 12 (LE), 7:43 pm
- May 24 (LE), 8:21 pm
- June 28 (RM), 8:36 pm
- July 26 (LE), 8:23 pm
- August 23 (LE), 7:51 pm
- September 20 (RM), 7:09 pm
- October 18 (LE), 6:27 pm
- November 8 (LE), 5:04 pm
- December 6 (RM), 4:51 pm

Weather Updates

Weather updates for all SFAA star parties are available the afternoon of the event on the SFAA Hotline: 415-289-6636 (289-NOFOG).

Board Meetings

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

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

General Meetings

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

- February 20
- March 19
- April 16
- May 21
- June 18
- July 16
- August 20
- September 17
- October 15
- November 19
- December 17

Other SFAA Events

- Annual Dinner: January 19
- Messier Marathon: March 8 (Alternate night April 5)
- Spring Astronomy Day: May 10
- Fremont Peak: May 30-31
- Annual Picnic: September 27
- Yosemite Weekend: TBA
- Fall Astronomy Day: TBA

Other Astronomy Events

- Riverside Telescope Maker's Conference: May 23-26
www.rtmcastronomyexpo.org
- Grand Canyon Star Party: June 21-28
www.tucsonastronomy.org/gcsp.html
- Golden State Star Party: July 2-5
www.goldenstatestarparty.org
- Stellafane: July 31- August 3
<http://stellafane.org>
- Oregon Star Party: August 28-31
www.oregonstarparty.org
- Fremont Peak Star-B-Q: TBA
www.fpoa.net
- California Star Party (Calstar): September 25-27
www.sjaa.net/calstar

2007-2008 MEMBERSHIP DUES

SFAA membership now comes due in June. Before now, dues were payable in the month a member first joined. Last year, the SFAA board voted to make everyone's dues payable at the same time - in June of each year. This was done for two reasons: 1) to save a great deal of work for our volunteer Treasurer, present and future, and, 2) for the convenience of members - it's easier to remember! In the past, many members forgot their due date and their membership unintentionally lapsed.

During this first year of transition: If your present membership runs past June 2007, just pay a prorated fee to extend your membership to June of 2008. Simply deduct 1/12 from this year's dues for each month already paid. For example, if you last paid your membership in September of 2006, you have a credit of three more months. Subtract 3/12 (1/4) from your annual fee and just pay that amount. We trust your math. Next year, and every year thereafter, everyone will pay only in June. Easy!

We realize this conversion process may be a bit confusing and more work for some. But this is a one-time transition and it will lessen the work and confusion for all the years to come!

N.B. for those of you who have a club discounted *Sky and Telescope* magazine subscription, you will need to renew your subscription separately. The magazine will send you a renewal notice. In the past, you had to send that renewal notice with payment to the SFAA; now you can mail your *Sky and Telescope* subscription renewal payment directly to *Sky and Telescope*. **Note: Not renewing your club membership on time may mean your magazine subscription(s) will also terminate.**

Thanks for bearing with us during this transition process -- it'll all seem worth it next year! Just complete the membership form on the last page of the newsletter and submit with your renewal check to:

San Francisco Amateur Astronomers
P.O. Box 15097
San Francisco, CA 94108

YEARLY RATES FOR MEMBERSHIP

\$10 – Youth (under 18) Student Membership	\$25 – Individual Membership
\$30 – Family or Foreign Membership	\$40 – Institutional Membership
\$75 – Supporting Membership	

MEMBER BENEFITS INCLUDE

- Subscribing to our Announcements mailing list to receive newsletter, activity and event announcements.
- Interaction with world class speakers as they present cutting edge astronomical research
- Discounts on *Sky & Telescope* and *Astronomy* magazines*
- Discounts on equipment and accessories at local telescope retailers
- Annual club Astrophotography, Literary & Art Awards
- Social events, such as our annual picnic and our awards dinner
- Club telescopes – use one of the club's loaner scopes on a month-to-month basis
- Yosemite Star Party – held at Glacier Point exclusively for SFAA members
- Access to events and resources in Northern California and beyond
- Field trips – to observatories and other locations of scientific interest, such as Mt. Wilson Observatory in Pasadena, Chabot Space and Science Center, Fremont Peak, and the Stanford Linear Accelerator Center
- Extended observing hours at the Mount Tamalpais Astronomy Program
- Access to dark sites in Northern California

San Francisco Amateur Astronomers
POB 15097
San Francisco CA 94115

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

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You can choose E-Mail (Recommended) or hard copy delivery for Above the Fog(Check one)

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\$25 Individual _____
\$75 Supporting _____
\$30 Family _____
\$40 Institutional _____

Members pay one half the amount listed below
Membership is billed for each upcoming year on June 30. Between January 1 and June 30, new

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.