ABOVE THE FOG

• BULLETIN OF THE SAN FRANCISCO AMATEUR ASTRONOMERS •

VOL. 47, No. 12 – December 1999

San Francisco
Amateur Astronomers

✷

Sharing the Wonders
of the Universe

Information Hotline
(415) 566-2357

Web Page
http://www.zennla.com/sfaa

A Letter from the President
Al Stern

Remember to vote! The ballots have been mailed separately. Please mail in your ballot as soon as possible, or come to the General Meeting on December 15th to cast your vote. A definite bonus if you attend the meeting is that you will hear Dr. Halton Arp talk about his early years in astronomy.

The photo contest is also on December 15. Those wishing to enter can bring their photos for display and judging.

The Annual Awards and Installation of Officers Dinner will be on January 22 at Strawberry Joe's. It is in the Strawberry Shopping Center at Tiburon exit of Highway 101. Please contact Chelle Owens at (415) 479-5313 if you are interested in attending.

My overall Mediterranean Cruise trip was a tremendous success. David Levy, myself, and about 20 other people started observing the Leonid Shower through holes in the clouds at about midnight. At about 4:00 a.m., local time, David and I saw, through a hole in the clouds, a glimpse of the peak of the storm and the multiple meteors coming together. Then, after a brief rain shower, yes, rain, we saw more clearing and then sun rise.

A later report confirmed that our intermittent view of the shower was successful. We had actually been able to see the best of what the 1999 Leonids had to offer.

SFAA Officers 1999

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Lorrie Boen (415) 921-1432

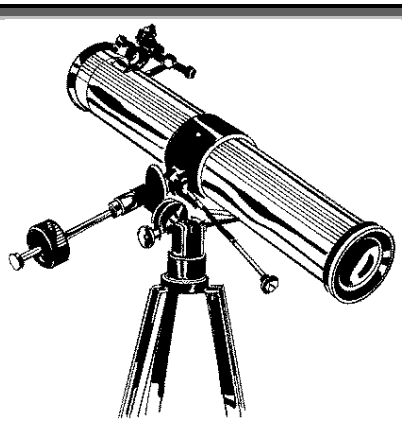
Telescope Loans
Ray Cash (415) 665-8666

SFAA Website Update

For those of you with online access, don't forget to visit the club's website. The bulletin board area especially is a great place to post info and ask questions. Go to http://www.zennla.com/sfaa.

Above the Fog is the official bulletin of the SFAA. It is our forum in which club members may share their experiences, ideas, and observations. We encourage you to participate, to submit your letters, drawings, announcements, articles and photos. We would also like to hear from our new members, about what you have done in the past, what other clubs you may have been with and, while you are at it, tell us about yourself. The deadline for the next issue is the last day of the prior month. Send your articles to Lorrie Boen to 765 Geary Street #302, San Francisco, CA 94109 or at lboen@aao.org.

Club Telescopes



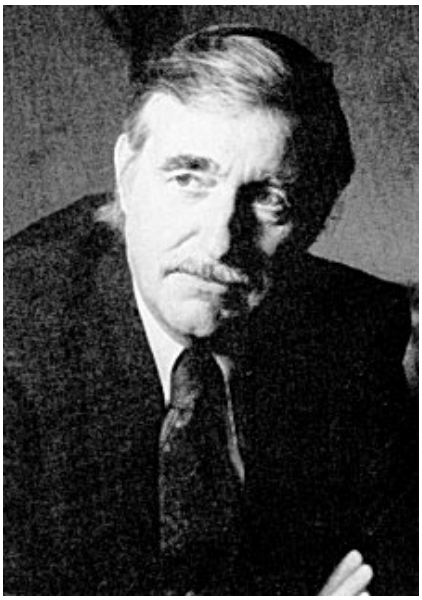
Long time member Ray Cash-LePennec has 3 loaner telescopes for club member use and is in charge of loaning them out. If you are interested in borrowing a club telescope, give Ray a call. There are many new members in the SFAA and they ask what kind of telescope to buy or use and this is a good way to get to know the Dobsonian type of scope and learn the sky as well.

CLUB DATES

Board Meeting
February 9 – 7:00 p.m. Western Addition Library – corner of Scott & Geary Sts. SF
SFAA Club Meeting
December 15 at 7:30 p.m.
Morrison Planetarium, Golden Gate Park
City Star Party
February 12 at 5:30 p.m. – first of the year

Special Guest Speaker

Dr. Halton C. Arp



The Early Years

December 15 General Meeting
Morrison Planetarium
California Academy of Sciences, Golden Gate Park, SF

Prof. Halton Arp is Guest Scientist at Max-Planck Institute for Astrophysics in Germany. He is an American astronomer know for his work on the identification of galaxies. He was born in New York City and was educated at Harvard University, where he obtained his BA in 1949. Four years later, he gained a Ph.D. at the California Institute of Technology and became a Carnegie Fellow at the Mount Wilson and Palomar Observatory in 1953. He was Research Associate at the University of Indiana from 1955 to 1957, and for the next eight years as Assistant Astronomer at the Mount Wilson and Palomar Observatory at the California Institute of Technology. From 1965 to 1969, he was Astronomer at those institutions.

From 1969, Dr. Arp was Astronomer at Hale Observatory and has been a visiting Professor of the National Science Foundation since 1960. He is a member of several astronomical associations and was Chairman of the Los Angeles Chapter of the Federation of American Scientists and of Sigma XI, in 1965. He also received several awards for his achievements in the field of astronomy.

In 1956, while at Indiana University, Dr. Arp established the ratio between the absolute magnitude of novae at maximum brightness and the speed of decline of magnitude. Since then he has published several papers, and, in 1965, wrote the "Atlas of Peculiar Galaxies". In 1987, he wrote the book "Quasars, Redshifts and Controversies" and "A Catalogue of Southern Peculiar Galaxies and Associations." Professor Arp published his newest book "Seeing Red Redshifts, Cosmology and Academic Science" in 1998.

We will be meeting in the Morrison Planetarium where Prof. Arp will give a talk on his early years.

Leonid Storm 1999: Aboard the ARIA
Part 1 of 4

By Jane Houston

The complete story & photos can be found at http://morris.san-jose.psn.net/~mojo/jhmac/index.html

The drive from NASA Ames Research Center near San Francisco to Edwards Air Force Base in the Mojave Desert was the beginning of my Leonid '99 adventure. It would end 10 days later, spanning half the globe during over 40 flying hours, mostly at night. Our group of 70 included 40 researchers, 25 Air Force personnel, and 5 members of the press -- give or take a few. We filled three aircraft. We were guests at 7 Air Force Bases; 4 in the US, two in the UK and one in Portugal's Azores. We literally covered the seams of the earth -- from the San Andreas Fault on the border of the Pacific and North America plate to the Mid Atlantic Ridge on the island of Terceira in the Azore Archipelago of Portugal. We even had a short 12-hour stay in downtown Tel Aviv on the Mediterranean Sea. Why all this November travel? The Leonid Storm of 1999, of course!

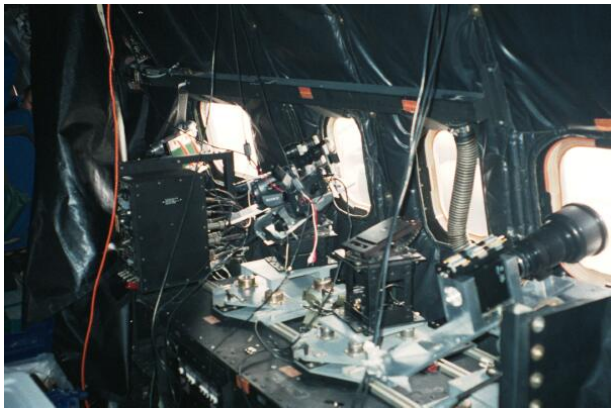
I was part of a 6-person team of mostly amateur astronomers, mostly experienced meteor observers on the flux measurement team. For 6 airborne nights the team counted the Leonids. The team was international in makeup. Claus Jobse from the Dutch Meteor Society developed the intensified image cameras. Gary Kronk from the American Meteor Society contributed vast meteor knowledge. Dave Holman from California Meteor Society brought a wealth of knowledge gleaned from many meteor campaigns with international experts. Chris Crawford from Oregon developed the software and counting technology and with it, over 30 years of meteor observing experience. Kelly Beatty from Sky and Telescope magazine rounded out the full time flux measurement team. Michael (Schmitty) Schmidhuber from Germany (working for ESA, the European Space Agency but on loan from the German Space Operations Center) ran his own image intensified camera and counted meteors with us some of the time.

Matt Lacey, of the NASA Ames Astrobiology mission and a graduate student at Stanford, ran experiments studying the spectra of persistent trains at high and low resolution; he had his own goggles and observed on his own right next to us. A Celestron Firstscope was part of his "eyes" to the Leonids. 19-year-old Dave Nugent, a student at De Anza College was our computer guy, and made the rest of us feel very old.

Two other groups had experiments on my Air Force plane, the ARIA. Mike Taylor from the University of Utah was studying airglow and looked for sodium and magnesium in the persistent trains of the meteors. A group including scientists from NHK, the Japanese television network, had an array of HDTV cameras and spectrum grabbing equipment. They broadcast and recorded the greatest show on earth. One of their cameras was hooked up to one of our eye-goggles and flux measurement devices, so we got a HDTV view of the Leonid Storm. Dr Peter Jenniskens, project P.I. from NASA Ames and the SETI Institute, rounded out our team. The press contingent, from BBC, AP, NHK, NASA, Air Force, Spacenews dot com, and Sky and Telescope wove through the aisles. Kelly was working on our team, so while airborne, he wore his meteor flux measurement hat, not his media hat. Sixteen Air Force personnel manned our flight, and through the mission became part of our extended family. They held the mission together. Oh, there was one other thing that held the mission together. Can you guess? Why duct tape, of course!

ARIA

The ARIA, acronym for Advanced Range Instrumentation Aircraft was our workplace most nights This aircraft features among other things, a snoopy nosed holding tank in front for telemetry and a radar dish for downlinking data to NASA Ames and US Space Command sites around the world. Newly installed optical glass windows would soon be covered in black plastic, hiding the array of 10 cameras. Cameras which soon would view the ancient cometary debris known as the Leonids.



The mission began Saturday morning, November 13, when "the wheels are in the well", as the pilot said. The five-hour flight to the east coast, a refueling break, and a 7-hour flight to the UK were our first practice Leonid Storm runs. We set up equipment and counted meteors. We yelled at the media who shined bright cameras in our eyes. They didn't do it the rest of the flight (well, without asking anyway). It was a practice run for them too! Halfway across the Atlantic Matt Lacey noticed an unusual spectral signature on his spectrometer. We had hoped against hope to see and study the Aurora Borealis and there it was, pillars, curtains and flames of brilliance. A lone meteor streaked though the light show. A dramatic punctuation point. The other plane had asked for and had been granted permission to turn around and circle the auroral show, so their upward looking cameras (on the wrong side of the plane only) could gather data never gathered from an airborne observatory. We all whooped and hollered, excited beyond belief! We shared the goggles, which intensified the light show dramatically over the views out the non-optical glass windows. 30 years of aircraft use had left them badly scratched. We glimpsed the aurora spectacle through all available windows, goggles and the array of television monitors. And we filmed hours of Leonids streaking through the aurora borealis. What a show! But the real show had not even begun yet!

ASTRONOMY in MARIN

Winter Events Calendar

JANUARY

Saturday, January 1st Star Party in Lagunitas (7 PM)
Saturday, January 8th Star Party in Lagunitas
Friday, January 14th Moon/planet viewing in Fairfax
Saturday, January 15th Moon/planet viewing at Book Passage
Sunday, January 16th Moon/planet viewing at Book Passage
Saturday, January 29th Star Party in Lagunitas

My Lunch Date with Mercury

By Stacy Jo McDermott

It's a rare event when one can share the love and wonder of astronomy with friends and co-workers during the day. The opportunity presented itself on Monday, November 15, 1999 when Mercury was to transit the Sun. Initially, I had thought the event was going to happen on Wednesday, November 17, 1999. It's a good thing that I pulled out my *Sky and Telescope* magazine that Monday morning before leaving for work to see that no, Wednesday was the date for the Leonids (Wednesday night into Thursday morning) and that Mercury's marathon across the Sun was indeed on Monday. Fortunately, my telescope was in its case and my handy camera tripod was next to it.

On my drive into work, I was calculating what I needed to do before I took lunch and how much time I needed to set up. (A lot and not much.) Did I remember to bring that all-important solar filter? Indeed I did. Had I not, then my lunch plans with our solar system's speediest member would have to wait another couple of hundred years.

Coming into work with my telescope and tripod generated quite a bit of interest. A couple of people had mentioned that they had heard about the event but were convinced that one would not be able to see it. "Ah, contraire my esteemed coworkers, come out after one p.m. and I will endeavor to treat you to a rare cosmological event. As long as it doesn't cloud over or get foggy."

So at one p.m. with my 80 mm Orion Short Tube telescope mounted on its tripod, I headed out to the building's front patio area. Making sure that my solar filter was secure, I started to find the sun with the scope. Bingo. It only took me a couple of tries. One coworker was extremely interested. He came out with me, watched me set up, asked questions and was very enthusiastic about his initial view of the sun through a telescope. At this point, we were viewing the sunspots, which added to the event because there were so many!

At the published time of first Mercury to Sun contact, I switched eyepieces. "Hmmm," I thought to myself, " the upper limb of the sun appears to have a dent in it. Could it be my eyepiece?" No, it was Mercury! As Mercury continued on its path I again switched eyepieces finally settling on my 10mm with a Barlow. Wow, there it was. Mercury, a little black spot moving across the Sun!

As coworkers came and went to and from lunch, I invited each and every one to take a peek and explained what was going on and what made it so special. The response was 100% positive. Even the delivery people coming into the building thought it was cool.

My lunch date with Mercury turned out to be quite fun, and being able to share the event made it very special.

A Brief View from the Sky Down Under

By Lorrie Boen

I just came back from a very short fortnight (that is, two weeks) in Brisbane, Australia. My family lives there, so, occasionally, I go to see them. I also have the good fortune of owning a very portable Meade ETX, which went with me. The weather on the other side of the world, however, is just as odd as it is here. Instead of hot, clear skies, it was a good 10 to 15 degrees cooler than normal, and cloudy. Just as I was beginning to despair, we had two clear evenings, just two days before my return home.

The first evening I spent showing my parents the wonders of Jupiter and four of its moons, Saturn and its rings, the great Orion Nebula, Sirius, Betelgeuse, the Pleiades, and a few other notables that fill the southern summer sky. All from their front balcony. Many of the true southerners that are never seen here did not rise until the clouds returned late in the night or were obscured by clouds early.

The second clear night was spent with Renato Langersek, the Vice President of the Southern Astronomical Society. Peter Marples, the President of the SAS, had given Renato my name and asked him to show me a few things since he would be tied up with other commitments. My younger brother, David, had kindly found the SAS and contacted them for me.

Because of time and weather constraints, we were only able to do some backyard observing. Renato set up his Meade LX200 and I had my ETX, too. We had a lovely couple of hours watching the southern sky dance its way around us. Renato brought out his home-adapted binocular attachment (from a microscope) to show me the difference of binocular vision. Wow!

Even though we did not get to see very much, I was most impressed by the friendliness and enthusiasm of these men and their willingness to show me what they could. I hope to keep in touch for the next time I am in the neighborhood.

Morrison Planetarium's

Benjamin Dean Lecture Series

presents

A forum for emerging theories with insights into the process of contemporary astronomical research.

December 14 at 7:30 p.m.

Redshifts as the Key to a New Cosmology

The "Big Bang" theory of cosmology is based on the assumption that redshifts are due to recessional velocity. Yet there is observational evidence that objects of enormously different redshifts can be in the same region of space.

Dr. Halton Arp, Max-Plunck Institut für Astrophysik

25 January

Small Comets and our Origins:

The Ecstasy and the Agony of the Scientific Debate

Are dark spots detected by orbiting spacecraft a "cosmic rain" of small comets Entering our atmosphere or instrument malfunctions?

Dr. Louis Frank, The University of Iowa

DEAN LECTURE INFORMATION LINE at (415) 750-7141

CALIFORNIA ACADEMY OF SCIENCES
GOLDEN GATE PARK

Dates for 2000

Month	Board Meeting	General Meeting	City Star Party	Mt. Tam Star Party	Other
January					SFAA Dinner Strawberry Joe's - Jan 22 Winter Star Party 1/31 – 2/5
February	Feb 9	Feb 16	Feb 12 – 5:30 pm		
March	Mar 8	Mar 15	Mar 11 – 6:00 pm		AANC workshop Mar 25
April	Apr 12	Apr 19	Apr 15 – 6:30 pm	Apr 1	Texas Star Party 4/30 – 5/7
May	May 10	May 17	May 13 – 7:00 pm	May 6	Riverside Star Party 5/26 – 5/29
June	June 14	June 21	June 10 – 7:30 pm	June 3	
July	July 12	July 19	July 8 – 7:30 pm	July 1 July 29	ASP Annual Meeting 7/13 – 7/18 Stellafane 7/28 – 7/29
August	Aug 9	Aug 16	Aug 5 – 7:00 pm	Aug 26	
September	Sept 13	Sept 20	Sept 2 – 6:30 pm	Sept 30	
October	Oct 11	Oct 18	Oct 7 – 5:30 pm	Oct 28	
November	Nov 8	Nov 15			
December	Dec 13	Dec 20			

COMET COMMENTS FOR DECEMBER 1999

By Don Machholz

Periodic Comet Machholz 2 remains in the southern evening sky. In late October Component D was found several arc minutes southwest of the primary component. As the comet brightens perhaps other parts will be found. In the Elements portion of this column I've included information for Comet LINEAR (C/1999 S4). As stated last month, it should brighten to unaided eye visibility next July in the northern polar region.

During the past month the LINEAR program in New Mexico found three new comets while the automated equipment at Lowell Observatory in Arizona (LONEOS) found three. The Catalina program found two, one being shared with LONEOS. The satellite SOHO found one new comet. Most notable is that Robert McNaught and M. Hartley discovered a comet (C/1999 T1) which is faint now but should be visible in amateurs' telescopes next summer. The Southern Hemisphere is favored until Jan. 2001, when the comet will move rapidly northward.

COMET HUNTING NOTES: We are nearly halfway through the year for the Wilson Comet Award. This award of $20,000 is divided among amateurs who find comets each year (June 12 to the next June 11). This "year", with seven months to go, only one person is eligible for the award. That is Steve Lynn of Australia who found a comet with handheld 10x50 binoculars on July 13. Obviously the automated search programs have taken away some of the potential amateur finds, with LINEAR's C/1998 T1 and C/1999 J3 being two recent examples.

EPHEMERIS

141P/Machholz 2

Date(00UT)	R.A. (2000)	Dec	El	Sky Mag
11-08	18h32.9m	-11d50'	54d E	10.9
11-13	18h47.8m	-11d46'	53d E	10.1
11-18	19h03.8m	-11d39'	52d E	9.4
11-23	19h20.8m	-11d33'	51d E	8.7
11-28	19h39.0m	-11d27'	50d E	8.2
12-03	19h58.5m	-11d25'	50d E	7.7
12-08	20h19.5m	-11d29'	50d E	7.4
12-13	20h42.5m	-11d41'	50d E	7.2
12-18	21h08.2m	-12d04'	50d E	7.1
12-23	21h37.7m	-12d38'	52d E	7.2
12-28	22h12.2m	-13d21'	55d E	7.4
01-02	22h53.4m	-14d07'	59d E	7.8
01-07	23h42.1m	-14d41'	65d E	8.2
01-12	020h37.6m	-14d41'	72d E	8.7

ELEMENTS

Object: P/Machholz 2
Peri. Date: 1999 12 09.2752
Peri. Dist (AU): 0.748905 AU
Arg/Peri (2000): 149.2991 deg.
Asc. Node (2000): 246.1434 deg.
Incl (2000): 012.8116 deg.
Eccen: 0.751075
Orbital Period: 5.22 years
Ref: MPC 35815
Epoch: 1999 12 08
Absol. Mag/"n": 12.0/7.5

Object: LINEAR (1999 S4)
Peri. Date: 2000 07 26.3979
Peri. Dist (AU): 0.766182 AU
Arg/Peri (2000): 150.9998 deg.
Asc. Node (2000): 083.1500 deg.
Incl (2000): 149.3473 deg.
Eccen: 1.0
Orbital Period: Long Period
Ref: MPC 36213
Epoch: 2000 07 26
Absol. Mag/"n": 7.0/4.0

SFMOMA FULL MOON

Apollo Mission Photographs of the Lunar Landscape

In celebration of the 30th anniversary of the first moon landing, SFMOMA (San Francisco Museum of Modern Art) presents spectacular, rarely seen images originally shot by Apollo astronauts. These large-scale prints of unparalleled clarity capture the immensity of the lunar landscapes.

The exhibit is on display from August 20, 1999 to January 11, 2000.
SFMOMA is located at 151 Third St., SF (415) 357-4000.

Call for hours and days that the museum is open.

The Silicon Valley Astronomy Lectures

Smithwick Theater, Foothill College
Los Altos, California

January 26, 2000
Dr. Alexei Filippenko (U. of California, Berkeley)
Einstein's Biggest Blunder: New Discoveries about "Antigravity"

March 1, 2000
Drs. Christopher McKay & Carol Stoker (NASA Ames)
and Dr. Margaret Race (SETI Institute)
Missions to Mars: Exploring the Red Planet

April 12, 2000
Dr. Sallie Baliunas (Harvard-Smithsonian Center for Astrophysics)
The Changing Sun and the Climate of the Earth:
Why Louis XIV Had Cold Feet

May 3, 2000
Drs. Jeff Cuzzi, Dale Cruikshank and Jeff Moore (NASA Ames)
Cold Hard Worlds at the Edge of the Solar System

For telephone updates about the series, check our hot-line at 650-949-7888

Wanted

I would like to thank Dennis Tye for his years of service as the Program Coordinator for the club. He has requested a replacement for that position.

So, I am now asking if anyone in the club is interested in being the Program Coordinator. This basically involves finding speakers for the club meetings and coordinating the requirements for their presentations and arrival at the Morrison Planetarium. Please contact me, Al Stern, at (510) 728-1851 if you are interested or

call Dennis to find out more about the job. If one starts now, there is plenty of time to get oriented before many speakers are needed.

The 2000 Astronomical Pocket Diary Available

You receive a request for a star party. Do find yourself checking your personal availability in one book, then checking the moon phase and other sky events in a different source? How much easier to have it all in one place!

The annual Astronomical Pocket Diary is a personal date book and almanac all in one. Published by Norbert Haley of New Zealand, this fascinating and practical little calendar is filled with astronomical and historical trivia. Moon information is given daily, solar system "flip book" diagrams and data weekly, special sky events like eclipses, meteor showers, conjunctions, etc. when they happen. And all the sky information is calculated for your location. Check it out on the web: http://members.tripod.com/~apd2/apd.htm.

If you are in the San Francisco Bay Area, you can order copies of the 2000 diary locally, and $5.00 of the price of each one will be a donation to the Mt Tamalpais Astronomy Programs co-sponsored by the Mt Tamalpais State Park, the SFAA and the MTIA. These special editions include the dates of Mt Tam star parties and astronomy programs in the Mountain Theater.

Use your diary to plan your observing sessions, or organize your life.

They also make great gifts for anyone with an interest in the sky. Get a head start on holiday shopping by ordering your copies today.

Send _____ copies of the 2000 Astronomical Pocket Diary to:

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Enclosed is _____check payable to MTIA, ____cash

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San Francisco
Amateur Astronomers

c/o Morrison Planetarium
California Academy of Sciences
Golden Gate Park, San Francisco, CA 94118

In This Issue of SFAA's Above the Fog

San Francisco Amateur Astronomers
Membership Application

Name:_____ Telephone:_____

Address:_____

email address:_____

Select one category:

O $25 enclosed, individual membership
O $30 enclosed, foreign membership
O $30 enclosed, family membership
O $30 enclosed, institutional membership
O $ 8 enclosed, youth membership (under 18)

make checks payable to **San Francisco Amateur Astronomers** and mail to:
Treasurer, SFAA, 13 Mabry Way, San Rafael, CA 94903

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.