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## SAN FRANCISCO AMATEUR ASTRONOMERS

*Sharing the Wonders of the Universe*

July 1992

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The SFAA Board of Directors meets on the second Wednesday of each month at 8:00 PM at the Randall Museum, 199 Museum Way, San Francisco. All Club members are welcome at Board meetings.

Information Line Number (415) 905-6445

The SFAA Bulletin is a forum in which club members may share their ideas and experiences in astronomy. We encourage you to participate and welcome your letters, sketches and articles on astronomical subjects. Please send your contributions to: SFAA Bulletin Editor, 190 Chilton Avenue, San Francisco, CA 94131. Deadline is the 18th of the month before publication.

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# Comets and The Origins of Life

The San Francisco Amateur Astronomers holds lecture meetings on the third Wednesday of each month at 8:00 PM at Morrison Planetarium, California Academy of Sciences, Golden Gate Park. On July 15 our guest speaker is Dr. Christopher Chyba of NASA-Ames. His topic is **Cometary Impacts and the Origin of Life.**

Dr. Chyba received his B.A. in Physics from Swarthmore College in 1982. Upon graduation he accepted a Marshall Scholarship for study at Trinity College in Cambridge, England. In 1985 he accepted a Sage Fellowship to do research under Dr. Carl Sagan in the Laboratory for Planetary Studies at Cornell University. He received his M.A. in Astronomy from Cornell in 1988 and his Ph.D. in August 1991.

Dr. Chyba's research interests have centered around conditions in the early Solar System and the role that terrestrial collisions of comets and asteroids may have played in creating those conditions. His work has appeared in *Icarus*, *Science* and the British journal *Nature*, and was the topic of his invited lecture at the 1990 Gordon Conference on the Origin of Life. This work has been the topic of interviews broadcast on National Public Radio, the BBC and elsewhere.

Dr. Chyba is currently a National Research Council Associate in the Space Science Division of NASA-Ames Research Center. Working with Dr. Chris McKay, he spent July 1991 above the Arctic Circle in Siberia investigating tundra lakes and evidence for viable bacteria in ancient permafrost.

## SFAA day at Fremont Peak

### Map to Fremont Peak

On the night of Friday, July 24 I have reserved the 30" telescope at Fremont Peak for the exclusive use of SFAA. For those of you unfamiliar with Fremont Peak, it has one of the largest telescopes available for the public use in No. California. Public programs are held 2-3 nights a month during the summer months. At other times the telescope is available on a reservation basis.

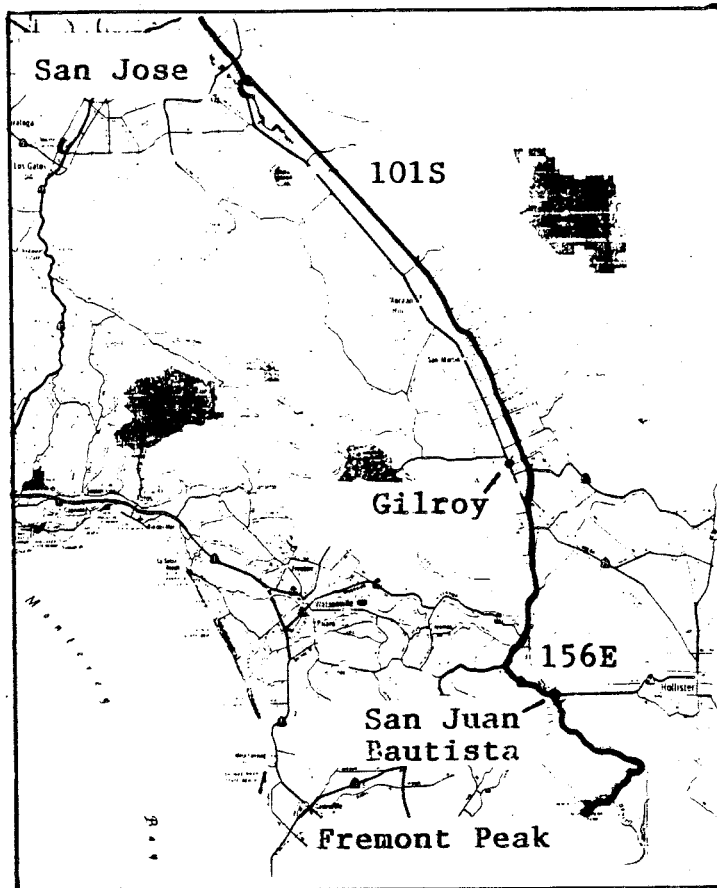
On Friday, July 24 SFAA members & guest have the use of the 30" telescope for themselves. Saturday, July 25 is a public night and everyone is invited to stay over for another night of viewing.

Fremont Peak is located about 100 miles south of San Francisco. It can be reached by traveling south on highways 101 to San Jose, then continuing south for about another 35 miles to highway 156 East to San Juan Bautista. About 1.5 - 2 mile after turning onto Hwy 156 look for a flashing yellow light. Turn right at the next intersection. Look for signs leading to the peak. You should first take the left fork of a "Y" then a right fork.

There are camping facilities at Fremont Peak for those who wish to stay overnight.

We plan on getting started at about dusk on Friday evening. Give me a call and let me know if you are planning to attend so that I'll know how many to expect. Also I'll help arrange car pools for those willing/needng rides.

Dennis Tye  
(415) 566-0587



## Mount Tamalpais

The next star party at Rock Springs on Mount Tamalpais is on Saturday evening, **August 1**. Arrive by 8:30 PM to hear Dr. Robert Wagoner of Stanford University talk on *Expanding Cosmic Horizons* in the nearby Mountain Amphitheatre. Afterwards share your knowledge and love of the night sky with other club members and the general public. By 10:00 PM the sparkling star clouds, dazzling clusters and billowy nebulae of the Summer Milky Way will be at the meridian.

## At The Planetarium

On **August 4** Dr. George Smoot, Principal Investigator for the COBE satellite, will be speaking at Morrison Planetarium on *Seeds of the Modern Universe in the Ancient Microwave Sky*. If you enjoyed Timothy Ferris' talk in May, you won't want to miss this lecture, the first in the planetarium's autumn series, *Exploring the Universe*. Tickets are \$2 each, available in advance. See the inside back cover for a ticket order form and schedule of speakers.

## A FIDDLETOWN WEEKEND

Amateur astronomers began arriving as early as Wednesday afternoon and by Saturday evening, May 30, about two dozen had gathered at the dark sky observing site near Fiddletown in the Gold Country. It was the biggest turnout in more than five years. I counted three pairs of giant binoculars—including Rick Decker's twin 20" telescopes—and 13 other telescopes, seven of them larger than 16 inches in aperture.

Among the new faces at Fiddletown were Ray and Marie Noelle Cash-Le Pennec, Michel Kotski, and Ira Stein with his wife Dominique and young son Jonathan. Dan Smiley arrived and left early. Jeff Cobb brought along his friend Lynne and his 10" Odyssey. Mary Engle was there with her husband Michael Urmann and her step-son Dan. Douglas Wolfe and his friend Franklin paid us a surprise visit from Sacramento, where they recently moved.

Special honors go to Kevin Cox and Ira Stein, aspiring members of the Messier Club. Ira picked up 28 new Messier objects during the weekend, and Kevin logged even more. Ira's favorites were M59/60, a close pair of bright galaxies in the Virgo Cluster, and M22, the biggest and brightest globular cluster in the Summer Milky Way. Honorable mention goes to Rick Decker, who spent most of Saturday night and Sunday morning trying to align his monster binocular 'scope.

The center of attention was Bill and Mark Cherrington's 25" telescope. What did we see? Stunning views of the Whirlpool Galaxy and M101....Fields crowded with faint galaxies in the Leo, Hercules and Coma Clusters....Comet Tanaka-Machholz a large bright 8<sup>th</sup> magnitude ball of light in the morning sky.

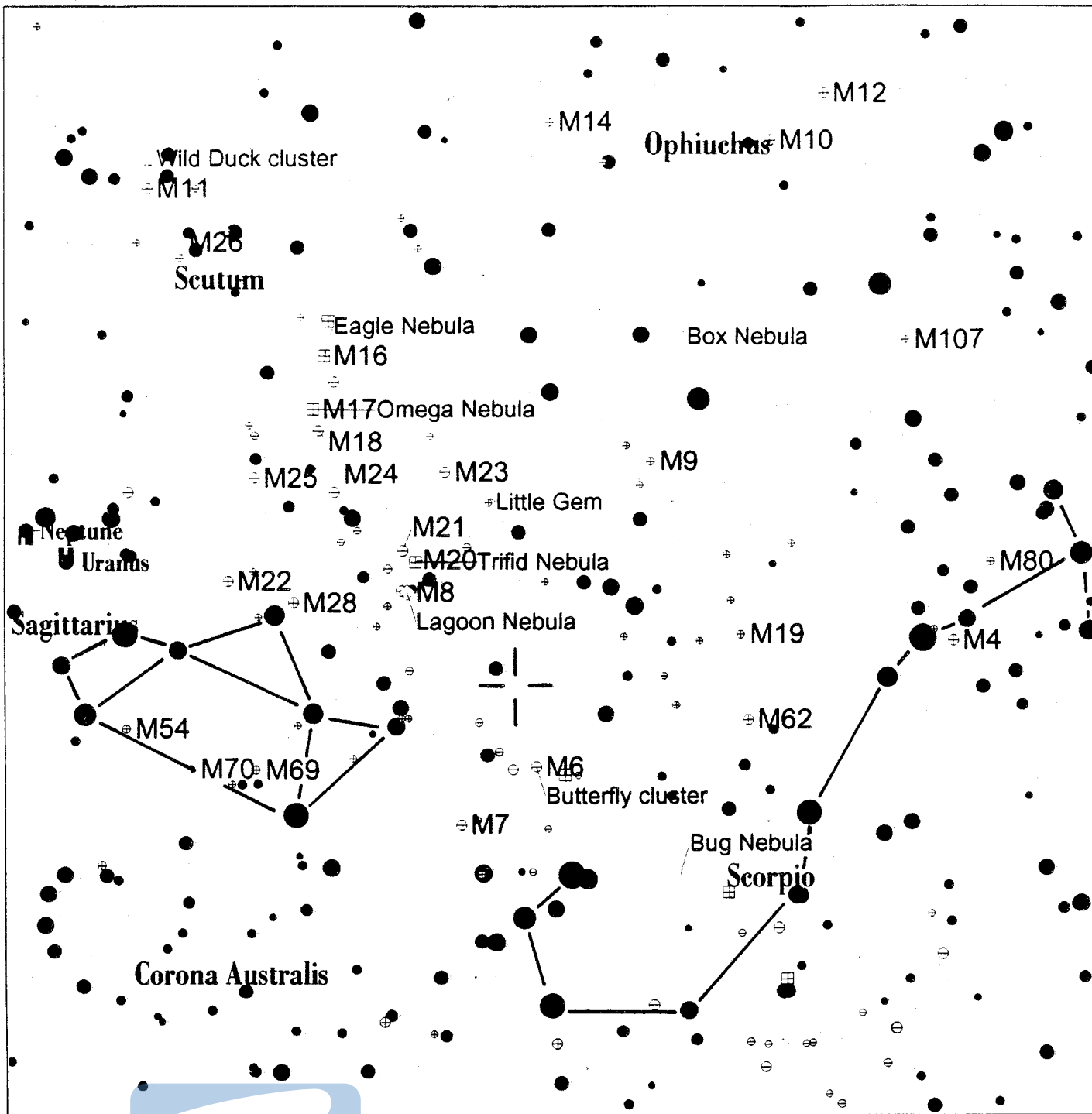
The views were nearly as impressive in the 20" Sky Design 'scopes of Charley Stifflemire and Ken Archuleta. Ken's is equipped with digital setting circles, which makes finding and identifying deep sky objects a breeze. His weekend favorites (mine too) were in the constellation of Draco—NGC 5907, a beautiful edge-on spiral; and NGC 5981/2/5, a triplet of multi-shaped galaxies together in the same field. The June issue of *Astronomy* has fine photographs of both.



Another favorite was the Veil Nebula, probably best seen in Steve Gottlieb's 17.5" 'scope with a 20mm Nagler and a giant 2" OIII filter. Dan Urmann liked the Swan Nebula while his father Michael preferred the crystal clear star images of Epsilon Lyrae in Joel Goodman's 3" Meade refractor.

Marvelous as the telescopic views were, we all took time to sit back and enjoy the finest spectacle of them all—a dark sky ablaze with the star clouds of the Summer Milky Way!

—Jim Shields



TOWARD THE CENTER OF OUR GALAXY

Stars:

9.5	●	5.0
9.0	●	4.5
8.0	●	3.8
7.5	●	3.1
7.0	●	2.8
6.0	●	2.5
5.6	●	2.0
5.3	●	1.0

NGC Objects:

○	Galaxy
⊖	Open Cluster
⊕	Globular Cluster
□	Planetary Nebula
◇	Nebula
⊞	Cluster+Nebulosity
○	Star
○	Other NGC Objects

Solar System Objects:

☉	Sun	♅	Uranus
♁	Mercury	♆	Neptune
♀	Venus	♇	Pluto
♂	Mars	☾	Moon
♃	Jupiter	☄	Comet
♄	Saturn	●	Asteroid

Center @ RA:17h37m20s Dec:-23d01'56"  
Date: 7/29/1992 Time: 22:00

## URANUS AND NEPTUNE: A MIDSUMMER NIGHT'S DREAM

Joel W. Goodman

July brings to opposition two planets in the outermost reaches of the Solar System that we seldom see or, for that matter, bother to seek out, although both are within the grasp of even the slightest optical aid. Uranus reaches opposition on July 7, followed by Neptune a mere two days later. Both planets are in Sagittarius, separated by only about two degrees on July 7, so the duo is handily within the same field of view of binoculars or low power telescopes. Since this represents an unusually intimate alignment of the two planets, it seems opportune to consider the oft ignored pair and even to dust off our telescopes and have a look. An added inducement is an occultation of Neptune by the Moon on July 14, commencing at about 2:00 a.m. PDT. The glare of the full moon may make the 8th magnitude planet difficult to see in small telescopes near the time of contact, but it surely is an event worth trying to observe.

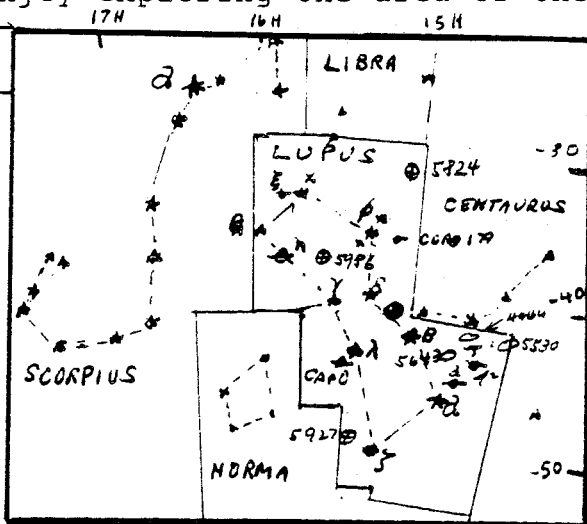
Uranus will be at magnitude 5.6 at opposition, visible to the naked eye in dark skies at favorable observing sites such as Fiddletown. Despite its brightness, Uranus eluded recognition until 1781 when William Herschel noted that it was not stellar in his 6-inch Newtonian reflector. Of course, it had been sighted many times previously but had invariably been mistaken for a star. Herschel, being a careful and experienced observer, took the trouble to increase the magnification of his telescope, which showed the object to have a non-stellar disk. He thought it might be a comet, but systematic tracking established that he had discovered the seventh planet and his reputation was made. Because of its great distance from us Uranus never gets larger than about 4 arc seconds, so at best all we can hope to see even in large telescopes is its subdued bluish-green disk. Indeed, the cloud belts of Uranus were not clearly delineated until the Voyager spacecraft made its recent flyby. Uranus is attended by a retinue of satellites, the major members of which are *Titania*, *Oberon*, *Ariel* and *Umbriel* (hence *A Midsummer Night's Dream*). I have seen Titania and Oberon with a 10-inch reflector, but Ariel and Umbriel require at least 16 inches and a fifth satellite, Miranda, is beyond the grasp of even large amateur telescopes.

The discovery of Neptune was a different matter entirely and comprises one of the great human interest sagas in the archives of astronomy. More than two magnitudes fainter than Uranus, magnifications of at least 200x on moderate-size telescopes are required to resolve Neptune's bluish disk. Its existence was predicted on the basis of perturbations in the orbital motion of Uranus, which could best be explained by a still unknown planet orbiting beyond. Two skilled mathematicians, Urbain Leverrier in France and John Couch Adams in England, independently solved the problem and accurately predicted the position of an eighth planet. The two were credited equally for the discovery of Neptune, but Adams actually communicated his solution to the British Astronomer Royal, George Airy, in 1845, who chose to ignore it. Meanwhile, Leverrier submitted his results to the French Academy of Sciences the following year, but had no better luck than Adams. Finally, the German astronomer Johann Gottfried Galle used Leverrier's tables of predicted positions to locate the new planet on September 23, 1846. Because Adams and Leverrier had independently derived essentially the same values they share the credit for discovering Neptune, a happy ending to the saga.

Neptune has one of the largest satellites in the Solar System, Triton, which should be visible in 6-inch telescopes despite its great distance from us. So hasten to the eyepiece and enjoy this "Midsummer Night's Dream".

LUPUS, THE WOLF -- By Gordon Ridley

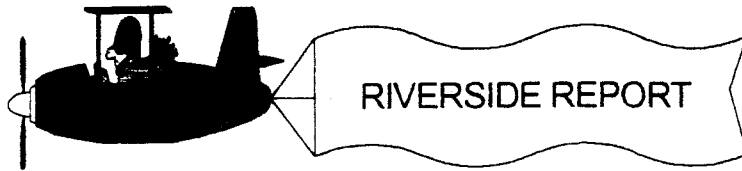
This constellation got its name from an erroneous translation by Astrologers, of Al Faha, the Arabian word meaning Leopard or Panther. The Greeks and Romans had thought of the constellation only as an unnamed wild beast, and Aratos, the Greek astronomer wrote of it as "The Wild Beast which the Centaur's right hand holds." But when the name Lupus was picked up by the Alphonsine Tables, and later, by the Latin Almagests, it came down to us as Lupus, the Wolf. Although very ancient, Lupus is inconspicuous, lying partly in the Milky Way, south of Libra, west of Scorpius, and east of Centaurus. As only a few faint stars were visible to amateurs in Canada and northern United States, it never received the attention it deserved. Here, in the San Francisco area, most of Lupus is visible despite its southern location. So, if you enjoy exploring the area of the tail of the Scorpion, look immediately to the west and consider a close look at Lupus. To do it justice however, a clear horizon and a dark sky will improve the viewing tremendously! While Lupus has no star brighter than second magnitude, a big plus has been a survey by the 19th century astronomer Benjamin Gould revealing it contained 159 naked eye stars. Those of you interested in double and multiple stars will find an unusually high proportion of them here, with 62 being listed in Burnhams Celestial Handbook. For deep sky enthusiasts there are three open star clusters, all mag. 10, but near the southern boundary, also three small planetary nebulas, mag 12, 14 and 14 respectively. Globulars and galaxies are listed in the table below, along with some interesting double and multiple stars:



star clusters, all mag. 10, but near the southern boundary, also three small planetary nebulas, mag 12, 14 and 14 respectively. Globulars and galaxies are listed in the table below, along with some interesting double and multiple stars:

Subject	Location	Magnitude	Size or Sep.	Notes
$\gamma^2$ Lup	14h26m-45°	4.6 & 9.3	158" @ 204°	Very wide
* a Lup	14h37m-46°	(6.2 & 6.2 9.2	0.1" @ 41° 19.3" @ 25°	(Yellow & blue Very beautiful
Cap0	15h11m-44°	7.3 & 7.8	50.6" @ 22°	Quite wide
Cor0-179	15h13m-37°	8.0 & 8.2	6.5" @ 227°	
21- $\xi$ Lup	15h57m-34°	5.3 & 5.8	10.4" @ 49°	A splendid sight
$\eta$ Lup	16h00m-38°	3.6 & 7.8	15" @ 20°	White & Ashy
NGC 5530	14h18m-43°	11.91	4.1' x 2.2'	Sb+ galaxy
NGC 4444	14h32m-43°	12.29	1.9' x 1.7'	S(B)b+ galaxy
NGC 5643	14h33m-44°	10.70	4.6' x 4.1'	S(B)c galaxy
NGC 5824	15h04m-33°	9	Size 6.2'	Class 1 Globular
NGC 5927	15h28m-51°	8.33	" 12.0'	Class 8 Globular
NGC 5986	15h46m-38°	7.12	" 9.8'	Class 7 Globular

\*Note: This star is not Alpha Lupus.



Why would anyone travel nine hours on one of the most boring stretches of highway in California to spend a few days with a bunch of astro-nerds showing off their ego-intensive, conspicuously-expensive telescopes, CCDs, computers and God-knows-what other astro related trappings? Well, if you've never built a telescope, or been bitten by the *building bug* (not restricted to telescope building), I'm not sure I can adequately answer such a question. Suffice it to say, people have been building things—and taking pride in what they have built well—for a long time. I think this is not only a very human trait, but a positive, admirable one.

Watching telescope design change and evolve before your eyes is very exciting—it is even more exciting if you have something to contribute yourself. This is why, I think, many people migrate to Riverside each year (not to mention the possibility of picking up astro supplies at bargain basement prices). As for the astro-nerds and conspicuous-consumptive, telescope-buyer types, yeah, they were there. My kind of people! Besides, when the sky darkened, views of the heavens beckoned, and earthly trivialities and petty differences receded away into proper perspective.

Chris Paul (you may know him as the manager of Orion's San Francisco store) brought an elegant 10" f/5 split-ring equatorial telescope that he built himself (including the primary mirror). We shared nice views of our favorite Messier objects through it. The most stunning views I saw, however, were through another 10" f/5 'scope that Kevin Medlock had hooked up not only to a computer drive, but to his neighbor's \$17,000 CCD camera. The telescope was directed at an object, soaked up light for 2 to 4 minutes, and then began *imaging* on a black and white monitor. The views were simply stunning: galaxies like M101 had

numerous spiral arms with knots of HII regions clearly visible; a barred spiral looked like a Palomar photo. Just incredible!

During the day there was much to see. There were at least a thousand people there, and hundreds of telescopes. Chris and I compared notes, visited commercial booths (mostly catering to ATMs) and chatted with other telescope makers. Along the way, we found Tom Osypowski, manufacturer of equatorial platforms for Dobsonians. I got a chance to show them both my platform and get some improvement tips from Tom. Fellow SFAA member Dennis Tye was there distributing computer software for a nominal fee.

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### Watching telescope design change and evolve before your eyes is very exciting...

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Although most of the hordes of people came from the L.A. area, San Francisco was well represented. In fact, the show-stopping, hands-down winner of *The Most Beautiful Telescope at the Riverside Telescope Makers' Conference of 1992 Award* (if they gave one) had to go to San Francisco's own Phil Alotis. You may have seen his 12" f/7 telescope at Mount Tam. It's a beautifully-finished oak tube cradled in an elegant, slender rocker box, also of oak. For Riverside Phil made a new *equatorial* rocker. Dobsonian in style, though tilted at our latitude angle, its polar shaft is a very used carwheel spindle and brake rotor. Every aspect of Phil's telescope is finely-crafted. It always drew a crowd, whether he was there or not. Hot Tip—Look for it in upcoming issues of *Astronomy* and *Sky and Telescope*.

—Ray Cash—Le Pennec

# Starry Starry Night

by Tom Kellogg

Light pollution and amateur astronomers, it seems like a hopeless battle. It seems like we are doomed to the blotting out of all dark sky locations world wide. So it seems. That is, unless you read a few IDA newsletters by David Crawford, founder of The International Dark Skies Association. He brings out some remarkable facts that indicate that we can have night time lighting and starry nights together! Here is IDA's Goals & Philosophy:

1 Dark skies are a critical asset, not only for astronomy but for the general public. We have lost a lot by not being able to see the prime dark skies our ancestors had. It would be a most serious crime if they disappeared for most all of us. They have for many already.

2 Quality nighttime lighting is also very important, and it does not receive the

attention it deserves, either in the general public or in the lighting industry. It is valuable, and we must do what we can to insure that it is treated that way. Those who believe so in the lighting industry need the help of the astronomers and of the knowledgeable public. And those who care about dark skies and about the nighttime environment need the help of the lighting professionals. **We are allies!**

3 Building awareness is the main thrust of IDA activities. We need an army to help build such awareness. We all need to learn about the issues ourselves, and then to spread the word. All the arguments are on our side; **lack of awareness is the major current problem.**

4 We must overcome the vast amount of apathy that exists. Less than 1% of either amateur or professional

astronomers are active in the effort to build awareness and to promote solutions to light pollution problems. Anyone can do something. Every little bit helps. We will get there 1 step at a time.

Reducing light pollution reduces energy consumption, expenses and even reduces vandalism! San Antonio (TX) School District was one of the first to try this idea back in 1973. The annual cost of repairing damage caused by vandalism dropped from \$160,000 to \$41,000. The thrill of vandalism is partly in seeing a window shatter or watching paint cover a wall. Darkness takes away that thrill. The Livermore Joint Unified School District and Eugene (OR) S.D. also reported astounding savings resulting from turning their lights off at night.

Spread the word and let's all help preserve our starry starry nights!

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## WANT ADS

Members' advertisements for astronomy gear are free and will run three times. Just send your ad to SFAA Bulletin Editor, 190 Chilton Avenue, San Francisco 94131. Please notify the bulletin editor if an item is sold so that it may be deleted. This service is provided to club members only on a space-available basis.

- ◆ **For Sale: Unitron Model 142 three-inch equatorial refractor with accessories. Excellent first scope, especially for city viewing. \$575 or best offer. Call Tom at 474-8992.**
- ◆ **For Sale: Orion 10X70 Giant Binoculars. Good condition but no case. Tripod adaptor included. \$150. Call Jim at 585-4088.**



Morrison Planetarium presents

# Exploring the Universe

International Space Year (1992) is a worldwide celebration of space exploration. The *Exploring the Universe* series is dedicated to ISY themes of discovery, exploration and scientific inquiry. Tickets are \$2 each, available in advance. Programs begin at 7:30 PM.

4 AUGUST

## *Seeds of the Modern Universe in the Ancient Microwave Sky*

Dr. George Smoot, Lawrence Berkeley Lab and Principal Investigator for COBE

22 SEPTEMBER

## *Astronomy and Ritual in the Andes: Archeoastronomy of the Incas*

Dr. David Dearborn, Lawrence Livermore National Lab

6 OCTOBER

## *HST: Back from the Dead! Scientific Discoveries with the Hubble Space Telescope*

Dr. Sandra Faber, UC Santa Cruz and Lick Observatory

17 NOVEMBER

## *SETI: The Search Begins*

Dr. Jill Tarter, SETI Institute

15 DECEMBER

## *Journey to the Red Planet*

Dr. Geoffrey Briggs, NASA Ames Research Center

### Ticket Order Form

Please send this order form, your check payable to Morrison Planetarium and a stamped, self-addressed envelope to: "Universe", Morrison Planetarium, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118.

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4 Aug: \_\_\_ x \$2.00 = \$ \_\_\_\_\_

22 Sep: \_\_\_ x \$2.00 = \$ \_\_\_\_\_

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17 Nov: \_\_\_ x \$2.00 = \$ \_\_\_\_\_

15 Dec: \_\_\_ x \$2.00 = \$ \_\_\_\_\_

Total \$ \_\_\_\_\_

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

## SAN FRANCISCO AMATEUR ASTRONOMERS MEMBERSHIP APPLICATION

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Select one category:

- \$20 enclosed, individual membership
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- \$25 enclosed, family membership
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- \$5 enclosed, youth membership (under 18)

Make checks payable to **San Francisco Amateur Astronomers** and mail to:  
Treasurer, San Francisco Amateur Astronomers, 32 Penhurst Avenue, Daly City 94015.

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 six to 25 inches diameter.