San Francisco Amateur Astronomers

c/o Josephine D. Randall Museum
199 Museum Way, San Francisco 94114

President	Toney Burkhart	668-9691
Vice President	John Muhilly	333-9315
Secretary	Irving Hochman	641-0770
Treasurer	Chelle Beard	878-4965
AANC Representative	Nancy Cox	826-2217
Bulletin Editor	Jim Shields	585-4088

BULLETIN FOR DECEMBER 1988

Date: WEDNESDAY, DECEMBER 21

Time: 8 P.M.

Place: Auditorium, J. D. Randall Museum
114 Museum Way, San Francisco

Subject: ELECTIONS and DISCUSSIONS and
MEMBERS' PRESENTATIONS

On Wednesday evening, November 9, at 9:08 pm, the Board of Directors was in the midst of its monthly meeting in the library of the Randall Museum. Suddenly the strident sound of a wailing siren filled the building. It was the alarm attached to the seismograph in the lobby of the museum. We rushed out to see the needle going wild and, of course, realized that an earthquake was occurring. It was a moderately strong one, registering 4.7 on the Richter scale and was centered 11 miles northeast of San Jose on the Calaveras fault. Since the museum sits firmly on solid rock, we felt nothing, not even a tremor. But it was very exciting to know that it was happening.

Also exciting, but of more significance to the SFAA that evening, was the withdrawal of Toney Burkhart and John Muhilly as candidates for re-election. Instead, they are candidates for election to the Board of Directors.

The new slate of Officers and Board Members is as follows:

OFFICERS:

____ President- Irving Hochman
____ Vice President- Bob Levenson
____ Sec'y.-Treas.- Chelle Beard

BOARD of DIRECTORS:

____ Toney Burkhart
____ Bill Cherrington
____ Joel Goodman
____ Robert Michaud
____ John Muhilly
____ Lisa Puls
____ Jim Shields

ELECTIONS - DISCUSSIONS - MEMBERS' PRESENTATIONS!- by I. Hochman

Besides electing next year's officers and board members, at the December meeting, we expect to hear (and possibly see) brief reports from various members, on recent travel and observing experiences. But most important of all, we want your direct participation in a discussion of the direction of the club in 1989. We want to be able to offer interesting programs in order to increase attendance at meetings and to attract new members. In addition to the fine lectures we now enjoy by eminent scientists there is a broad area we want to cover relating to observational astronomy, like astrophotography, the various types of telescopes and what they do, star party participation, and more.

This means that we need to discuss it to see what our interests are and to find the best ways to implement them. So let's get ready for a great new astronomical year with real involvement and participation in the activities of the club.

THERE WILL BE A DOOR PRIZE FOR A LUCKY MEMBER!

DECEMBER 21 - BE SURE TO ATTEND

If you are absolutely positively unable to attend the December meeting to vote in person, use page one of this Bulletin as an absentee ballot. Mark your choices in the spaces provided and return the ballot by mail to: Chelle Beard - 32 Penhurst Avenue, Daly City 94015. Absentee ballots must be received not later than December 20 to be counted in the election.

SFAA ANNUAL DINNER IN JANUARY

The SFAA annual installation and awards dinner will be held on Wednesday, January 18, 1989 at the SAN REMO Restaurant, 2233 Mason Street in San Francisco's North Beach district. Come at 6:00 p.m. for no-host cocktails (hard or soft). Dinner will be at 7:00 p.m. and will include soup, salad, pasta, entree (choice of meat, fish or poultry), desert and coffee. The cost is $17 per member or guest.

The annual dinner will be our first regular membership meeting of the New Year. Incoming officers will be welcomed and members will be honored for their services to the club. The dinner will feature a special guest speaker from NASA; details will be announced in the January Bulletin.

Get your checks and reservations in as soon as possible to Chelle Beard - 32 Penhurst Avenue, Daly City 94015. Last year everyone enjoyed getting together at the San Remo for dinner. COME AND SHARE A GREAT EVENING WITH US!

NEXT SFAA STAR PARTY: ROCK SPRINGS, MT. TAMALPAIS

The regular star party this month is on Saturday, December 10, at Rock Springs on Mt. Tamalpais. We will meet at 5:30 pm at the Shoreline Shopping Center in Mill Valley and sashay up the mountain together. If you need to know how to get there, see the map on the next page of this Bulletin.

When you leave the star party, don't forget to turn on your headlights BEFORE you leave your parking place. SAFETY FIRST!

DECEMBER EVENTS - by Irving Hochman

Geminid Meteors - December 13/14. The shower peaks on these nights with from 50 to 60 meteors per hour in early morning hours from a dark-sky site.

Saturn - Very low in the southwestern sky in the evening twilight. See it while you can because it will disappear after the first week in December and won't be back until early 1989 in the pre-dawn sky.

Jupiter - Big, bright, beautiful. Mag. -2.8 and in the sky all night. In Taurus near the Pleiades and Hyades clusters.

Mars - Still pretty bright at -0.8 mag. but fading. Look for Jupiter and Mars side by side high in the southern sky.

Venus - At -4.0, a "morning star" beacon. Only the Sun and Moon are brighter. As dawn nears, Venus is low in the southeast.

Mercury - At superior conjunction, behind the Sun on December 1. It may be visible by the end of the month, low in the southwest during evening twilight. It will be higher in the sky in January and easier to see.

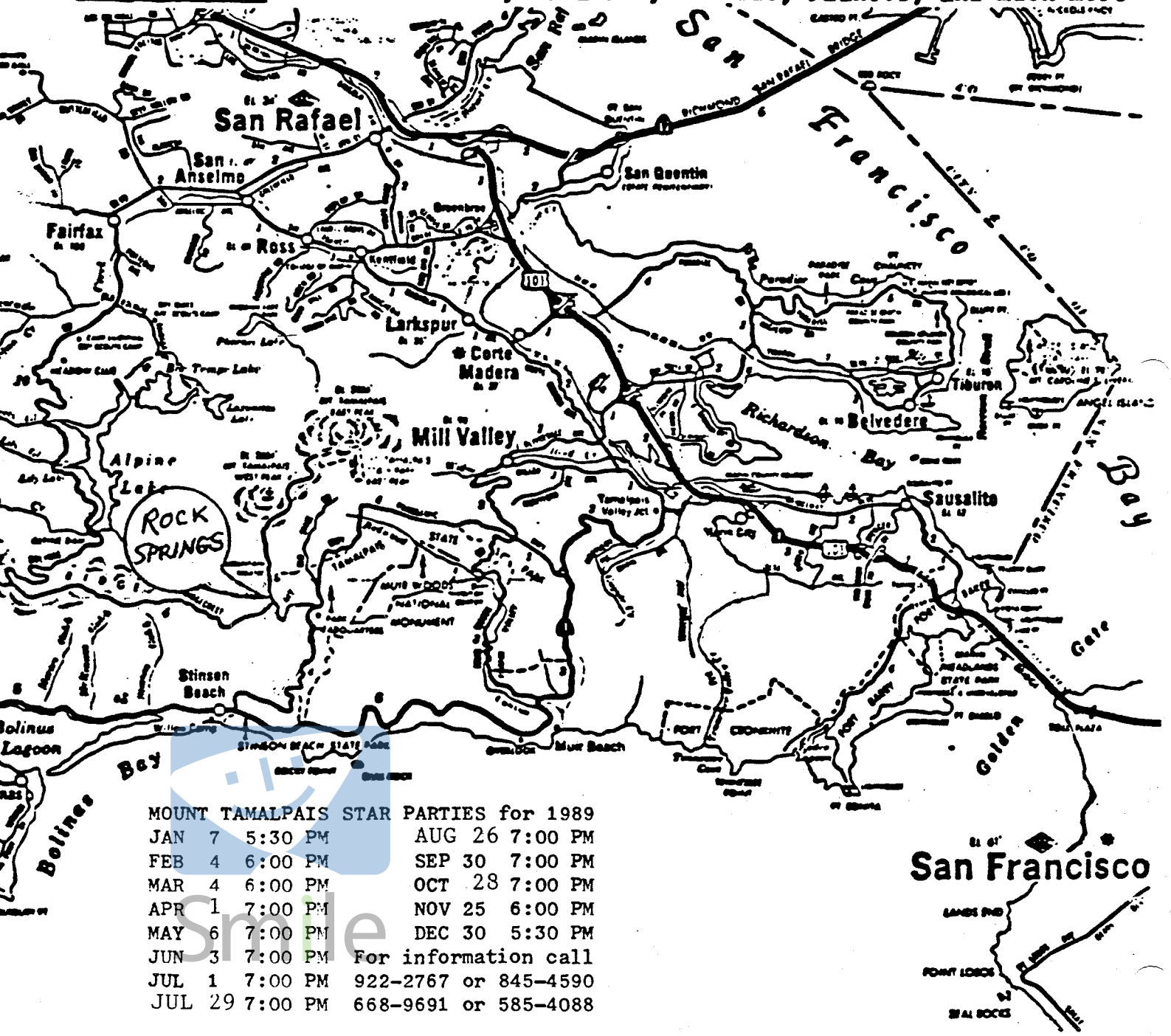
Mira - Look between and below Jupiter and Mars in the south to see the famous reddish variable star, Mira. Because Mira's magnitude varies greatly, it is invisible to the naked eye for most of the year. Its maximum brightness for this year is predicted for early December, when it may reach about 3rd magnitude.

December 1 - Last quarter Moon. Dec. 1-8 Saturn (last chance)
3 - Happy Chanakah
9 - New Moon
13/14-Geminid meteors
16 - First quarter Moon
21 - Winter solstice. The Sun reaches its southernmost point on the imaginary celestial sphere around the Earth and winter officially begins.
22 - Uranus in conjunction with the Sun
23 - Full Moon. Notice how high in the sky the full moon is this month. The Moon is opposite the Sun, which is now lower than at any other time of year.
25 - Merry Christmas
30 - Last quarter Moon
31 - Happy New Year!

SAN FRANCISCO
AMATEUR ASTRONOMERS
Star Parties at Rock Springs

The MOUNT TAMALPAIS monthly Star Party has been arranged for members and guests through an agreement between the Rangers at Mount Tamalpais State Park, and the San Francisco Amateur Astronomers.

1. See chart below for dates and times of Star Parties.
2. Bring warm clothes; food and soft drinks if desired.
3. State Park and Star Party rules are in effect: No alcohol; no smoking or narcotics of any kind; lights must be equiped with a filter.
4. Things to see: Star Clusters, Galaxies, Nebulae, Planets, and much more!



MOUNT TAMALPAIS STAR PARTIES for 1989

JAN	7	5:30 PM	AUG	26	7:00 PM
FEB	4	6:00 PM	SEP	30	7:00 PM
MAR	4	6:00 PM	OCT	28	7:00 PM
APR	1	7:00 PM	NOV	25	6:00 PM
MAY	6	7:00 PM	DEC	30	5:30 PM
JUN	3	7:00 PM	For information call		
JUL	1	7:00 PM	922-2767 or 845-4590		
JUL	29	7:00 PM	668-9691 or 585-4088		

CLUB STAR PARTIES IN 1989

Many SFAA members who responded to the club survey last summer said they were interested in attending a star party at the Fiddletown observing site north of Jackson in the Gold Country. With this in mind, the Board of Directors has scheduled star party dates in 1989 so that,whenever possible, you can visit Fiddletown without missing the regular monthly star party at Rock Springs on Mount Tamalpais.

Showing the public the night sky at Mount Tam is a very important part of the club's activities and the Board strongly urges you to bring your telescope or binoculars along to help out. If you're interested in seeing galaxies and nebulae at their best, though, you really should plan an occasional visit to the much darker skies at Fiddletown. It's about a three hour drive from the City but well worth it. During 1989 the best dates for your first visit there are in late summer: July 8, August 5 or September 2.

The Fiddletown observing site is available to SFAA members thanks to the generosity of Bob Kestner, the owner of the property. Bob asks that, on your first visit there, you be the personal guest of another SFAA member with whom Bob is already friends. When you decide you're ready, please call Jim Shields at 585-4088 or Steve Gottlieb at 525-7968 a week or so in advance to make the necessary arrangements.

Specific ground rules for observing at Fiddletown will be published in a later issue of the Bulletin.

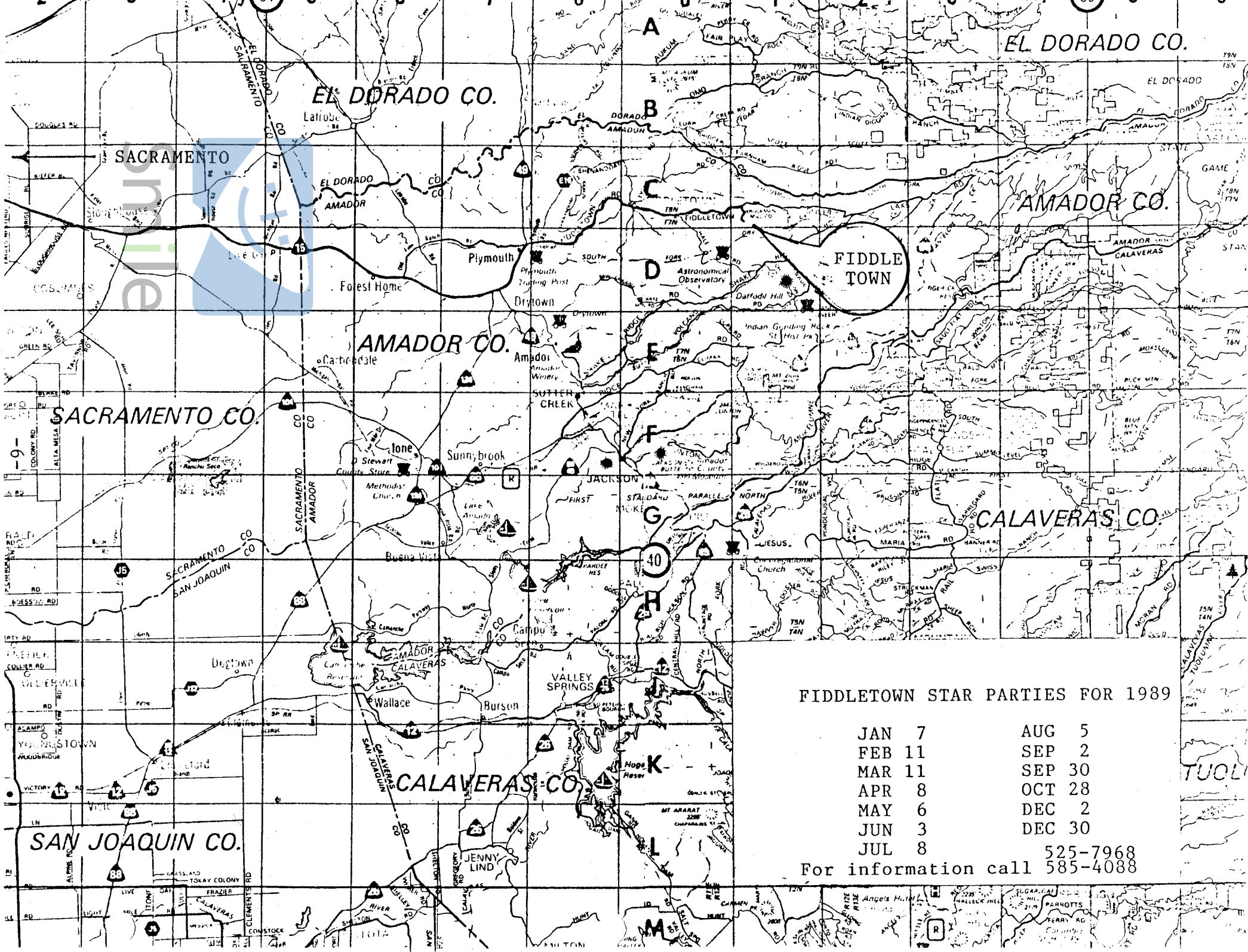
DEATH VALLEY NIGHTS

You are invited to join the Sidewalk Astronomers and their caravan of large telescopes to Death Valley National Monument this winter. See the Universe as it really is in the crystal clear black velvet skies of the California desert.

Solar telescope viewing and desert nature hikes by day. The Sidewalk Astronomers expect to be there from before Christmas to New Years Day. Call 567-2063 for more information.

SOLAR ECLIPSE TOUR

Twilight Tours has announced plans for its five-day expedition to Baja California to view the solar eclipse in July, 1991. Cost of the tour is expected to be $875 per person (double occupancy), including air fare from Los Angeles. A fully-refundable $100 deposit will secure your space now. For more information contact Irving Hochman at 641-0770.



FIDDLETOWN STAR PARTIES FOR 1989

JAN 7	AUG 5
FEB 11	SEP 2
MAR 11	SEP 30
APR 8	OCT 28
MAY 6	DEC 2
JUN 3	DEC 30
JUL 8	

For information call 585-4088 525-7968

THE FORNAX GALAXY CLUSTER - by Steve Gottlieb

After the Virgo Cluster, the second most easily observed rich group is the Fornax galaxy cluster. Centered at 3h 35m, -35 40' (1950), it would be more popular if situated further north. Nevertheless, the cluster provides a spectacular field of view if the southern horizon is dark. Within just one square degree there are nine galaxies ranging in brightness from 10th to 12.5 magnitude.

With my C-8 at 100X, five galaxies (NGC 1374, 1379, 1380, 1381 and 1387) are easily visible in a 40' field, while two others (NGC 1399 and 1404) are just outside the field of view. Many other members can be located in an eight-inch scope within a few degrees of the central core.

The following notes were taken with my 13.1" Odyssey I in the dark skies at the Fiddletown observatory in Amador County. The finder chart shows all the objects described in the notes plus many anonymous galaxies which may be viewed in 16" or larger scopes.

NGC 1365: Largest in cluster, bright, large, elongated core, very diffuse outer halo (arms).

NGC 1373: Very faint, near my visual threshhold, recorded as a "nebulous spot" northwest of NGC 1374.

NGC 1374: Fairly bright, round, bright core, brightest in a trio with NGC 1373 and 1375.

NGC 1375: Fairly faint, edge-on streak oriented E-W, located 2' south of much brighter NGC 1374.

NGC 1379: Bright, almost round, bright core containing a very small bright nucleus.

NGC 1380: Very bright, elongated roughly N-S, bright core with faint extensions, very faint star 0.8' southwest of the nucleus.

NGC 1380A: Faint, very thin small streak oriented N-S, located 5' NNE of NGC 1380.

NGC 1381: Fairly bright, edge-on elongated NW-SE, bright core with fainter extensions.

NGC 1382: Very faint, round, fairly small, very diffuse glow NE of NGC 1381.

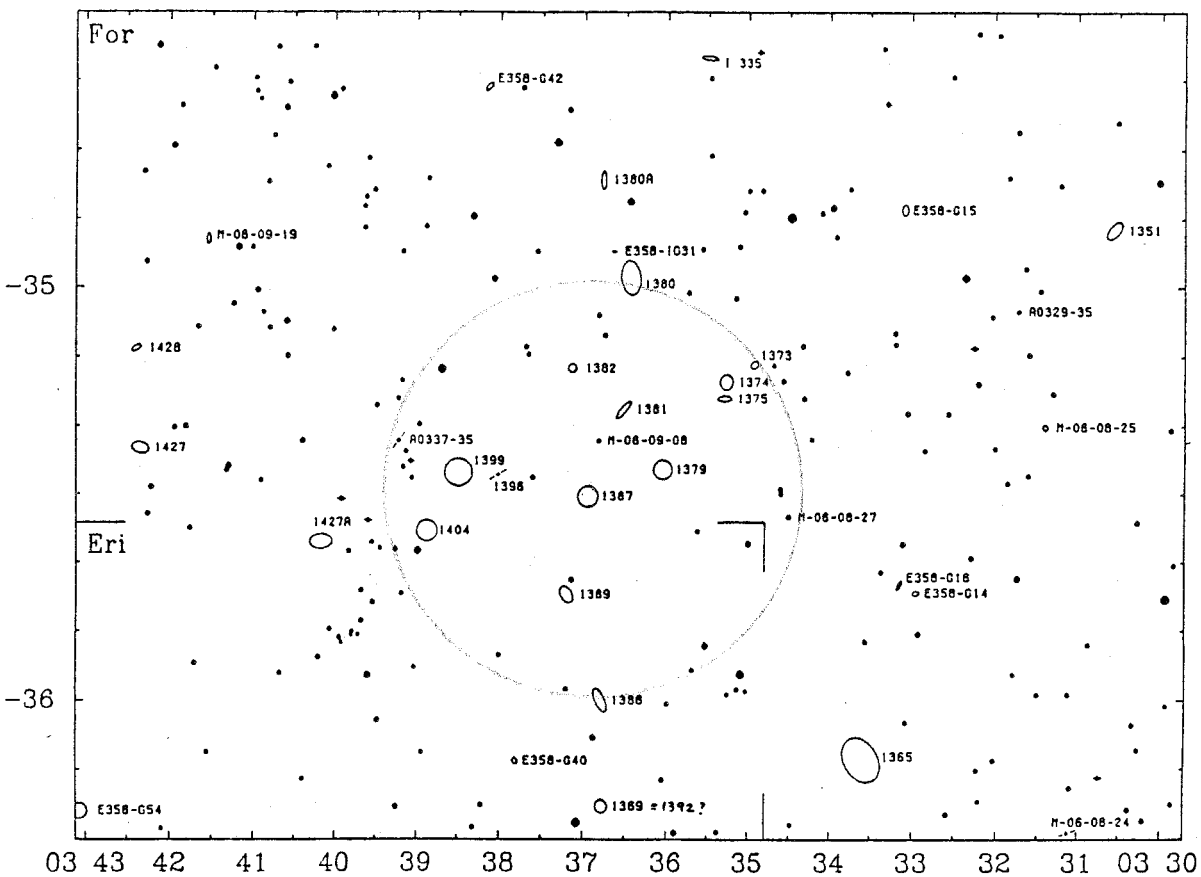
NGC 1386: Moderately bright, elongated SW-NE, brighter core.

NGC 1387: Fairly bright, small, round, probably faint stellar nucleus.

NGC 1389: Moderately bright, small, almost round, slightly brighter core.

NGC 1399: Brightest in the central region and the second largest, large bright core, fainter large outer halo, star superimposed o.3' NW of nucleus.

NGC 1404: Bright, fairly small, round, bright core, located just NW of a mag 8 star and 10' SE of NGC 1399.



NASA Symposium

On December 5, 1988 the Pioneer Venus Orbiter will have completed ten years of successful operation in orbit around Venus. In recognition and celebration of this important milestone, a special symposium on the program's scientific achievements will be held at NASA Ames Research Center at 1:30 p.m. on December 5. For more information contact Irving Hochman at 641-0770.

COSMOLOGY AND THE ART OF MIRROR GRINDING - by Jim Shields

How can we see the universe for ourselves without a telescope? How do we know what we're seeing unless we study the nature of the universe? As you can see, cosmology and the art of mirror grinding are intimately related subjects. John Dobson has been teaching classes in both topics in San Francisco during the autumn months.

WHAT IS THE UNIVERSE MADE OF?

WHAT MAKES IT RUN?

This was our homework for the first week of cosmology. (Contrary to public opinion, this is not the same as cosmetology, the art of applying make-up.) During the same week we rough ground our mirror blanks to a roughly spherical curve with water and grit. This is real "caveman's work"; later we'll be moving into "the suburbs" (with fine grinding) and then "downtown" (with polishing) as the work demands greater and greater accuracy.

For an eight-inch f/6 mirror, you can tell you've got it about right when a penny just fits under a straight edge held across the surface of the mirror. The next step is to measure the mirror's focal length by holding it up to the sun. All this to see a bunch of hydrogen atoms falling together. Why do they fall? We call it gravity (whatever that is).

After a month or so we had progressed to polishing and had begun to assemble our telescopes from parts available in most any hardware store (or junk yard). Final testing and figuring of our mirrors to a near-perfect paraboloid will be done by observing star images on both sides of focus. Our homework assignments in cosmology were:

WHAT IS SPACE?

WHAT IS TIME?

WHY DON'T WE FALL THROUGH THE FLOOR?

I'd try to tell you the answers, but you'd never believe them. Oh well, let's try the third question; the answer is, "because of our stupidity"! See, I told you. I guess you'll just have to take the class yourself.

John was careful to explain that these were not his own personal "crazy ideas" (although he has plenty of those, too), but those of Einstein and Heisenberg. They are the fundamentals of modern physics. For a novice telescope-maker, the magic of creating a parabolic curve accurate to a millionth of an inch or so is almost as great a mystery as the nature of the universe we'll be looking at.

(To be continued next month)

This monthly calendar is available with membership in the Astronomical Society of the Pacific, 390 Ashton Ave., San Francisco CA 94112.

ABRAMS PLANETARIUM

SKY CALENDAR DECEMBER 1988

An aid to enjoying the changing sky

Use this scale to measure angular distances between objects on diagrams below.

0° 10° 20°

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Looking for a **holiday gift idea** for your skywatching friends? Why not gift subscriptions to ***Sky Calendar***? Order from Abrams Planetarium, address below.		**Planets at Dusk: Jupiter** is brightest evening "star", getting higher in E as month progresses; compare Dec 2, 21. **Mars** is bright but fading, high SE to SSE at dusk. Mars is high in S not long after end of eve twilight. **Saturn** sinks into SW twilight early in month; see Dec 3, 10, 11. **Mercury** visible last few days of month; see Dec 29. **Planets at Dawn: Venus,** most brilliant morning "star", is getting lower; compare Dec 4, 30. **Jupiter** sets in WNW in morn twilight early in Dec, then ½ hour earlier per week.		Mercury at superior conjunction, beyond Sun & invisible. Compare Dec 29. 1	Evening: 2	Evening: 3
Dec 4, morning: Moon, Spica; Venus, Alpha Librae; SE	Morning: 5 Spica, Moon, Venus, Alpha Librae; SE	Morning: 6 Beta Lib, Alpha Lib, Venus, Moon; ESE–SE	Morning: 7 Beta Lib, Alpha Lib, Venus, Old Moon; ESE–SE	Morning: Last Quarter Moon, in south; Regulus	Pleiades, Jupiter, Aldebaran, Hyades; ENE–E	Handle of *TEAPOT*; Saturn, SW
Evening: 11 Moon, Saturn setting; SW	12 Geminid meteors best tonight and tomorrow night, 11 p.m. to 5 a.m. Callisto, the outermost of Jupiter's 4 bright satellites, is farthest E of Jupiter tomorrow night.	Morning: 13 Beta Lib, Alpha Lib, Venus, Head of Scorpius; SE	Callisto will pass closely S of Jupiter Saturday evening. 14 Solstice 10:28 a.m. EST; winter begins. Callisto farthest W of Jupiter. 21 Tuesday & Wednesday evenings Dec 20 & 21: Pleiades, Moon 20, Jupiter, Moon 21, Aldebaran, Beta Tauri, Zeta Tauri; ENE–E	Nearly four hours after sunset, shortly after Sirius rises, look for 11 stars and 2 planets of 1st mag or brighter. See map over. 15 Thursday evening, Dec 22: Pleiades, Aldebaran, Beta, Zeta, Moon; Full tonight (northernmost; rose shortly before sunset); ENE	9 New Moon 12:36 a.m. EST (9:36 p.m. PST on Dec 8). December's southernmost Moon sets, invisibly, around sunset.	Evening: Can you still see Saturn? Using binoculars, look 9° to right of young Moon. 10 Saturn, SW, Moon
Morning: 18 Venus, Beta Sco, Head of Scorpius, Antares; SE	**Moon's dark edge covers 5th-mag ϵ Ari** 19 Denver 5:14 pm MST; Austin 6:16 pm CST. Farther E, in dark sky: Chicago 6:42 pm CST; E Lansing 7:48 pm EST; Atlanta 7:58 pm; Washington DC 8:13 pm. **Graze:** Jan '88 **S&T** p. 69. Farther SE, Moon narrowly misses star.	Morning: Venus passes Beta Sco. 20 Venus, Beta, Antares; SE Evening: See next box.		**Calendar diagrams** show sky from lat 40° N in mid-twilight (¾ hour after sunset or ¾ hour before sunrise), except Dec 23, 24, 26, 27. **Watch Mira fade** in coming months. See George Lovi's *Ramblings*, Oct ***Sky & Telescope,*** p. 387.	Evening: High SE to SSE. 16 Moon, Mars	Evening: 17 Moon, Mars
Morning: Venus passes 6° N of Antares. 25 Venus, Antares; SE	Saturn in conjunction with Sun. 26 5 hours after sunset: Moon, Regulus; ENE–E	Morning: 27 Regulus high WSW, Moon 5 hours after sunset: Regulus, Moon; ENE–E	Morning: High SW to WSW. 28 Moon, Regulus	Evening: Can you see Mercury yet? It'll be higher and easier next week. 29 SW, Mercury, WSW	Two hours after sunset: 23 Moon, Castor, Pollux; ENE	Two hours after sunset: 24 Castor, Pollux, Moon; ENE
				Morning: Venus, Antares, SE 30	Morning: High in south 31 Spica, Moon at Last Quarter	

Magnitudes: Venus −4.0 to −3.9; Jupiter −2.9 to −2.7; Mars −0.8 to 0.0; Mercury (Dec 24-31) −0.7; Saturn +0.5. **Motions: Sun** goes 32° E, crossing from Ophiuchus into Sagittarius Dec 17. **Mercury:** See Dec 1. Mercury's angular distance from Sun increases to 17° E on Dec 31. Mercury will reach greatest elongation, 19° E of Sun, on Jan 8, 1989. **Venus** goes 39° E, from Libra through Scorpius into Ophiuchus, and passes stars on Dec 5, 20, 25. See calendar diagrams. Venus' elongation decreases from 30° on Dec 1 to 23° on Dec 31. **Mars** goes 14° E in Pisces, passes 0.7° S of Epsilon Psc on the night of Dec 25, and 0.7° N of Zeta Psc on Dec 30. **Jupiter** retrogrades (goes W) 3° in Taurus and passes 5° of the Pleiades Dec 1; see Dec 2. **Saturn** on Dec 1 is 22° E of Sun and 5° NW (right) of Lambda Sagittarii, top of the Teapot. Saturn moves very slowly and is overtaken by the Sun on Dec 26. **Telescope: Jupiter's disk** shrinks from 49" to 46" (arcseconds) across. **Saturn's ring system,** 34" across, is tilted 26½° from edgewise in early December. **Mars'** gibbous disk shrinks from 13" to 10", while lighted fraction decreases slightly, from 90% to 88%. At midmonth, the S pole is tipped over 25° toward Earth. But it is late summer there, with only the last remnant of a polar cap. **Venus'** gibbous disk shrinks slightly, from 12" to 11", while the lighted fraction increases from 87% to 92%.

Robert C. Victor, Jenny L. Pon, Robert D. Miller

ISSN 0733-6314

Extra Subscription: $6 per year, starting anytime, from ***Sky Calendar,*** Abrams Planetarium, Michigan State University, East Lansing, Michigan 48824

BOARD MEETING

The next meeting of the SFAA Board of Directors will be on Wednesday, December 14 - 8 pm. in the library of the Josephine D. Randall Museum. All members are invited and encouraged to attend Board meetings. Why not come to the next meeting and contribute your ideas and suggestions?

FROM THE EDITOR - by Jim Shields

What do you think the purpose of this Bulletin should be? Personally, I think of it as a forum for SFAA members to exchange their ideas and experiences.

It only takes a few minutes to participate. Is there something coming up that might interest other SFAA members? Let me know about it. Do you have any ideas for making the club more fun? Send me a LETTER TO THE EDITOR with your suggestions.

As always, the Bulletin welcomes your contributions. Articles should be related to astronomy and generally should run no more than two typewritten pages, or about 500 words. It's nice if you can type them (so the editor won't have to). Don't worry too much about your style; we're not competing with Astronomy.

Send your announcements, letters to the editor and articles to: SFAA Bulletin, C/O Jim Shields, 190 Chilton Avenue, San Francisco 94131. The deadline remains the 18th of the month.

NEW MEMBER

It's a pleasure to welcome new member Kent Scott to the club. We hope to see Kent often at meetings and star parties, and invite him to participate in the activities of the club.

SFAA MEMBERSHIP BENEFITS

Membership dues of $15 per year include the monthly SFAA Bulletin and free entry to all club activities, such as lecture meetings, star parties, summer picnics, etc. In addition, you may obtain suscriptions to various astronomy publications at greatly reduced rates. Current rates are as follows:

Sky & Telescope - $16
Astronomy - $14
Deep Sky - $8
Telescope Making - $8

For more information please contact Chelle Beard - 32 Penhurst Avenue, Daly City 94015. Telephone:878-4965 evenings. Renewing members are asked to contact Chelle before sending in their fees if they haven't received a renewal letter from her.

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CLASSIFIED ADS

Members' ads are free and will run three times. Please notify the Bulletin editor if an item is sold so the ad may be deleted. This service is provided monthly on a space-available basis.

WANTED: Four to six-inch reflector, complete scope or mirror only. Call Douglas at 386-1876. (3)

FOR SALE: 17½" Dobsonian and 10" Meade DS10 with eyepieces. Call Toney 668-9691 after 6 pm until midnight.(2)

FOR SALE: Sony Stereo Cassette Recorder - TCS 430 - with microphone and headset. Brand new, never used. $75 or best offer. Call 731-9020.