EPHEMERIS

Vol. 3 No.2 Official Publication of the San Jose Astronomical Association FEBRUARY, 1991

BOARD ELECTIONS!

At the February 2nd General Meeting, five SJAA members will be elected to the Board of Directors, to serve two-year terms. The Nominating Committee is Del Johnson and Jack Peterson. Nominations will also be accepted from the floor.

The Board has nine members, four of which were elected last year and have a year to go. The Officers are elected by and from the Board, to serve one-year terms (possibly repeated).

SLIDE SHOW

Immediately following the elections, host Bob Fingerhut will be presenting three slide shows, one of which features Space Art by the renown Chesley Bonestell. Asteroid 3129 was named in his honor, shortly before his death in 1986.

STAR PARTIES THIS MONTH

Don't forget that the SJAA always has several star parties running in the month. There will be a Grant Ranch party out at Halls Valley that will also include participation with the Halls Valley Astronomical Group. Mark your calendar on Feb. 9th for this one. On the 16th, the SJAA will be at Fremont Peak State Park for a New Moon star party. On Friday, February 22, the SJAA will be conducting a public star party at Branham lane park. Directions to these events can be herd on our new "Hot" line. Remember that all events are weather permitting.

BOARD MEETING REMINDER

SJAA Board Meetings are now held before the General Meetings at 6:30. All SJAA members are welcome to attend.

ASTROPHOTO IX

Astrophoto IX conference, sponsored by Ventura County Astronomical and Orange County Astronomers will be held this year on March 30. Held in Thousand Oaks, this day long seminar will cover all aspects of celestial photography. There will be information for beginners and advanced astrophotographers, lectures on astronomy and astrophotography, photo exhibits, information on new equipment and techniques, vendor booths, door prizes, refreshments. This is usually a very well attended seminar, attracting several hundred amateur astrophotographers from around the country. Attendees can expect a full day of lectures and workshops lead by the countries leading astrophotographers. The photo exhibit is very extensive, presenting images that are truly professional. If you have any interest in astrophotography, you might want to consider attending this conference. For more information contact: Ventura County Astronomical Society, P.O. Box 982, SIMI, CA 93060. Preregistration, including proceeding is $20.

FEBRUARY 2ND BOARD ELECTIONS, FOLLOWED BY SLIDE PRESENTATION 8 PM

FEBRUARY 2: GENERAL MEETING, SPEAKER BOB FINGERHUT WILL BE PRESENTING THREE SLIDE SHOWS. BOARD ELECTIONS ALSO AT THE START OF THE MEETING.

FEBRUARY 9: STAR PARTY AT GRANT RANCH COUNTY PARK, WITH THE HALLS VALLEY ASTRONOMICAL GROUP. DUSK TILL FROZEN.

FEBRUARY 16: STAR PARTY AT FREMONT PEAK STATE PARK. DUSK TILL DAWN.

FEBRUARY 22: (FRIDAY) PUBLIC STAR PARTY AT BRANHAM LANE PARK. (FOR DIRECTIONS CALL THE "HOT" LINE.

FEBRUARY 23: SECOND SESSION OF THE INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS. RED CROSS BUILDING, 8PM.

MARCH 3: GENERAL MEETING 8 PM, JIM RICHARDSON ON OBSERVING METEORS

SJAA HOTLINE
24 HOUR INFORMATION
408-997-3347

SPACE PROGRAM UPDATE

- BOB FINGERHUT

ASTRO-1 SPACELAB YIELDS GREAT DATA - The spacelab that was carried into space inside the shuttle orbiter Columbia, had three ultraviolet telescopes and an X-ray telescope. They were able to make 400 observations of 135 targets. The pre-launch objective was for 200 targets. The last target was Comet Levey, that was just emerging from behind the Sun.

The Hopkins Ultraviolet Telescope (HUT) made 101 observations of 75 objects. Among these were detailed observations of Jupiter and its moon Io to obtain data on the torus of material that Io's volcanic activity creates around Jupiter. HUT also observed the binary star Z-Cam. During the Astro mission, the Z-Cam white dwarf began explosive eruptions as material from the red giant component was pulled to the surface of the white dwarf.

The Goddard Ultraviolet Imaging Telescope (UIT) film system 900 images of 64 targets during 89 observations. The film has now been developed and is showing

spectacular results. The images are expected to reveal 500-1000 new galaxies and 1000 more white dwarfs.

The Wisconsin Ultraviolet Photo-Polarimeter had 88 observations of 70 different targets. WUPPE's measurements of the polarized light should help astronomers better understand star formation.

The Goddard Broad Band X-ray Telescope (BBXRT) made 116 observations of 76 targets. BBXRT made 83 hours of observations compared with only 3 minutes of similar data ever obtained before through sounding rocket flights. One of the most important targets imaged by BBXRT was NGC 1399, a large elliptical galaxy. The BBXRT made the first high-quality spectrum of the halo of gas that surrounds the galaxy. These measurements should enable astronomers to estimate the mass of the galaxy and its chemical abundances.

The quality and quantity of data received is remarkable in light of the problems encountered during the flight. Both on-board payload command dedicated display units overheated and burned out from debris trapped in the units heat sinks. The pointing and control problems forced managers on the ground to send Columbia an overage of 450 commands an hour throughout the mission to keep the science data flowing.

The Tracking and Data Relay Satellite System (TDRSS) became the unsung hero of the mission by enabling ground controllers to uplink the thousands of commands to the upload that would have been made by the crew on board. There were also problems with the star trackers on the instrument pointing system on which the three ultraviolet telescopes were mounted and the mission was shortened by one day by expected bad weather at the preferred landing site.

GALILEO AND MAGELLAN PROVIDE DATA ABOUT VENUS - Galileo returned the data that it collected as it passed 10,000 above Venus in February, when it passed by the Earth in December. Both of Galileo's imaging systems, the solid-state imaging camera and the near-infrared mapping spectrometer, were able to penetrate below the visible cloud deck providing the first high-resolution information about this middle deck. One mystery that the Galileo data may help solve is why Venus' atmosphere revolves clockwise at about 250 mph, about 60 times faster than the planet's clockwise rotation. Experimenters are also looking for lighting in Venus' atmosphere.

Magellan has now completed about a third of the radar mapping of Venus' surface. No craters smaller than 3 kilometers have been found possibly indicating resurfacing by recent volcanic activity. A couple of weeks ago it was thought that Venus' surface was relatively ancient with volcanic activity shutting down 400 million year ago.

GALILEO EXPLORES THE EARTH/ MOON SYSTEM - Galileo made its Earth flyby on December 8, 1990. The spacecraft provided some novel observations of the Moon, revealing areas under lighting conditions that had not been seen before. Photographs of the Moon showed the 600 mile diameter Orientale Basis and the South Pole - Aitken Basin. Existence of the South Pole - Aitken Basin had been inferred but never seen clearly before. Spectroscopic filters on the camera determined a high iron content exists in the soil around this basis, implying that the impact that formed the basin dug deep into the iron-rich mantle below the planetary crust. The impact that produced the Orientale Basin appears to have had shallow penetration. Galileo also made a time-lapse movie of the Earth's rotation.

NASA BREAKTHROUGH WITH DRUG TO CURB SPACE SICKNESS - NASA researchers have found that when the drug promethazine is injected during the first day of a flight, it eliminates severe symptoms of space motion sickness and astronauts are normally symptom-free by the end of their second day of flight. The drug has been administered to astronauts on 14 occasions since 1988.

EXPLORING IN LYNX

- STEVE GOTTLIEB

Between the prominent constellations of Ursa Major and Auriga lies the barren region of Lynx, a constellation notably lacking in bright stars. For this reason, I find myself wincing when I discover that the object I want to track down is located in this area. Just finding a suitably close naked-eye star to begin starhopping can be a chore! Nevertheless, for the persistent deep sky observer, we can find here a distant globular cluster, a bright edge-on galaxy, an unusual galaxy dubbed the "Bearpaw", a rich Abell galaxy cluster, a giant planetary and many fine multiple stars.

The sole globular, NGC 2419, is located 7! north of Castor at 7h38.1m +38!53 (2000). Situated over 200,000 light years from the galactic center, it's distance is comparable to the Magellanic Clouds and may in fact be extragalactic. Nevertheless, it is easily visible in an 8" scope as a small, faint, hazy patch about mag 11. Resolution is virtually impossible even in large amateur scopes as the brightest stars are just Mag 18. You'll find the globular is collinear with 2 mag 8 stars to the west and the 3 objects are equally spaced along this line. The brightest galaxy in Lynx is NGC 2683, a mag 10 beauty located 6! west of third magnitude Alpha Lyncis at 8h52.7m +33!52. In my C8, 100X revealed a bright, very elongated streak 8'x1.5' in length. With my 13.1" at 166X, this is a real showpiece with a bright middle that appears mottled and dusty and long thin arms extended southwest-northeast. In a barren portion of the constellation at 8h13.2m +46!00 is a dusty Sd galaxy NGC 2537, dubbed the "Bearpaw". Although visible in my C8 as a faint, round hazy region, a large scope is required to bring out its curious structure. In my 17.5", the normally brighter central section of the galaxy contains a dark vacuity or a dark lane and a bright knot (actually a huge H11 region) is visible along the NW edge of the galaxy. Interestingly, this galaxy was actually classified as a globular cluster in the NGC and John Herschel felt he had resolved this object into many extremely faint Mag 20 stars!

Conveniently located just 40' south of Alpha (the brightest star in the constellation at mag 3.1) is a faint but rich galaxy cluster, Abell 779. Its brightest member is NGC 2832 which is just visible in an 8" but appears moderately bright with a bright core and an elongated halo with my 17.5" at 220X. Close scrutiny will reveal that it forms a triple system with NGC

2831, an extremely compact companion situated at its southwest edge and NGC 2830, very low surface brightness edge-on galaxy just 1.4' southwest of NGC 2832. Careful exploration with my 17.5" at 220X revealed a total 8 galaxies within a 30' circle centered on NGC 2832. This cluster was discovered by Lord Rosse, using a 72" in 1850 and he logged from 12 to 15 members during 9 different observations. Most of the members have NGC designations and are plotted on the Uranometria 2000.0 but are very faint nevertheless. One of my favorite obscure planetaries is Jones-Emberson 1, a giant object with dimensions 405"x360" with an integrated visual magnitude of 12.0 and located at 7h57.8m +53!25. This object benefits greatly from an OIII filter because of its very low surface brightness and you could easily pass over it with any scope without a filter. Using my 17.5" at only 82X, it is very large and annular with 2 brighter enhanced arc sections along the southeast and northwest rim. Interestingly, because these arcs are so prominent photographically, the planetary has been confused in both Burnham's Celestial Handbook and the Skalnate-Pleso Atlas of the Heavens with a small pair of elliptical galaxies, NGC 2474/2475 located 33' south.

In the northwest corner of Lynx is an excellent triple star 12 Lyncis situated at 6h46.2m +59!27. We find here a mag 5.4 and 6.0 pair just 1.7" apart aligned east-west with a third mag 7.3 companion at 9". The close pair resolves at 165X in the C8. With how small a scope can you split this pair? Moving to a closer separation, an excellently matched double is 71338, located at 9h21.0 +38!11 near the Leo Minor border. This pair has been decreasing in separation and now stands at about 0.7". With equal magnitudes of 6.5 and 6.7, though, this is an ideal test star. Back in 1984, I was able to resolve this duo into two tangent disc at 300X with just a 5" mask on my 13.1". Today, a 6" or 8" is probably required to do the trick.

COMET COMMENTS

- DON MACHHOLZ

One new faint comet has been realized lately, while a new bright one has been discovered. Still visible are Periodic Comet Wild 2 and Comet Levy.

The year 1990 was not a big one for comets. Three comets were found by amateurs, seven by professional astronomers, and six returning comets were recovered. Comet Austin, which held hopes of being a bright comet as we entered 1990, failed to live up to expectations.

Periodic Comet Shoemaker-Levy 2 (1990p): This was originally an asteroid discovered by Carolyn Shoemaker on plates exposed by herself, Eugene Shoemaker, and David Levy. However, in mid-December, CCD images showed a 29-arc-second long tail. So the asteroid is now declared to be a comet. This comet has an orbital period of 9.3 years, it was last closest to the Sun on Sept. 25 at 1.84 AU. The number "2" follows the name because the comet discussed last month, found on plates by the Shoemakers and Levy, has an orbital period of 17.8 years and a perihelion distance of 1.53 AU. It now becomes known as Periodic Comet Shoemaker-Levy 1.

Comet Brewington (1991a): This new comet was discovered at ninth magnitude on the evening of Jan. 6 by Howard Brewington of New Mexico. I have no orbit for it yet.

METEOR NOTES

- JIM RICHARDSON

Because of the rather light amount of shower activity this month, I thought it would be convenient to look ahead to the remainder of the year, and provide some information on the upcoming major showers.

The data given is for the San Jose area, and the rates given are what a single observer should resonably expect to see under clear, dark skies. Note that the Maximum Times given are not for passage of the Earth through the most dense portion of the meteor stream, as is usually the case, but for the time of Local Maximum, which corresponds to the time of highest radiant elevation nearest this actual maximum. This will be either at culmination, or at the beginning of astronomical twilight, whichever comes first. A moon rise/set in the P.M. hours corresponds to the previous day.

SHOWER: LYRIDS
MAX DATE: APRIL 22, 1991
MAX TIME: 3:50 AM PST
LOCATION: 82 DEG AL, 114 DEG AZ
LOC RATE: 10 M/H
MOON: SET, 1:51 AM PST
OUTLOOK : GOOD

SHOWER: ETA AQUARIDS
MAX DATE: MAY 4, 1991
MAX TIME 3:30 AM PST
LOCATION: 20 DEG AL, 106 DEG AZ
LOC RATE: 15 M/H
MOON: RISE, 11:31 PM PST
OUTLOOK: POOR

SHOWER: DELTA AQUARIDS
MAX DATE: JULY 28, 1991
MAX TIME: 2:24 AM PST
LOCATION: 36 DEG AL, 180 DEG AZ
LOC RATE: 15 M/H
MOON:: RISE, 8:16 PM PST
OUTLOOK: POOR

SHOWER: ALPHA CAPRICORNIDS
MAX DATE: JULY 29, 1991
MAX TIME: 12:09 AM PST
LOCATION 43 DEG AL, 180 DEG AZ
LOC RATE: 5 M/H
MOON: RISE, 8:16 PM PST
OUTLOOK: POOR

SHOWER: PERSEIDS
MAX DATE: AUGUST 12, 1991
MAX TIME: 12:09 AM PST
LOCATION 60 DEG AL, 43 DEG AZ
LOC RATE: 50 M/H
MOON: SET, 7:55 PM PST
OUTLOOK: EXCELLENT

SHOWER: ORIONIDS
MAX DATE: OCTOVER 21, 1991
MAX TIME: 4:32 AM PST
LOCATION: 68 DEG AL, 180 DEG AZ
LOC RATE: 20 M/H
MOON: SET, 4:30 AM PST
OUTLOOK: FAIR

SHOWER: TAURIDS
MAX DATE: NOVEMBER 3, 1991
MAX TIME: 12:53 AM PST
LOCATION: 67 DEG AL, 180 DEG AZ
LOC RATE: 10 M/H
MOON: RISE, 3:44 AM PST
OUTLOOK: GOOD

SHOWER: LEONIDS
MAX DATE: NOVEMBER 17, 1991
MAX TIME: 5:07 AM PST
LOCATION: 66 DEG AL, 123 DEG AZ
LOC RATE: 10 M/H
MOON: SET, 2:13 AM PST
OUTLOOK: GOOD

SHOWER: GEMINIDS
MAX DATE: DECEMBER 14, 1991
MAX TIME: 2:11 AM PST
LOCATION: 85 DEG AL, 180 DEG AZ
LOC RATE: 60 M/H
MOON: SET, 12:00 AM PST
OUTLOOK: EXCELLENT

SHOWER: URSIDS
MAX DATE: DECEMBER 22, 1991
MAXTIME: 5:30 AM PST
LOCATION: 46 DEG AL, 15 DEG AZ
LOC RATE: 10 M/H
MOON: RISE, 5:35 PM PST
OUTLOOK: POOR

Ref: (1) Cook, A.F., "A working List of Meteor Streams", Evolution and Physical Properites of Meteoroids, NASA (1973). (2) Roggemans, P. (ed), "IMO Handbook for Visual Meteor Observations", Sky Publishing Co. (1989). (3) Meisel, D.D., "Meteor", McGraw-Hill Encyclopedia, 7th Ed., 1990.

COMET EPHEMERIS

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
			Periodic Comet Wild 2 (1989t)				
01-24	15h31.5m	-16°11'	15h34.3m	-16°22'	68°	M	10.8
01-29	15h44.3m	-16°47'	15h47.2m	-16°57'	70°	M	10.8
02-03	15h56.8m	-17°19'	15h59.6m	-17°27'	72°	M	10.9
02-08	16h08.9m	-17°45'	16h11.8m	-17°53'	75°	M	10.9
02-13	16h20.6m	-18°08'	16h23.4m	-17°53'	77°	M	10.9
02-18	16h31.8m	-18°26'	16h34.7m	-18°32'	79°	M	10.9
02-23	16h42.4m	-18°40'	16h45.4m	-18°46'	82°	M	11.0
02-28	16h52.6m	-18°51'	16h55.5m	-18°55'	84°	M	11.0
03-05	17h02.1m	-18°58'	17h05.0m	-19°02'	87°	M	11.1
03-10	17h10.9m	-19°02'	17h13.9m	-19°06'	90°	M	11.1
			Comet Levy (1990c)				
01-24	11h55.3m	-35°56'	11h57.8m	-36°13'	105°	M	7.8
01-29	11h31.5m	-33°41'	11h34.0m	-33°57'	114°	M	7.9
02-03	11h06.7m	-30°46'	11h09.1m	-31°02'	124°	M	7.9
02-08	10h41.8m	-27°12'	10h44.1m	-27°28'	133°	M	8.0
02-13	10h17.8m	-23°07'	10h20.1m	-23°22'	142°	M	8.1
02-18	09h55.5m	-18°43'	09h57.9m	-18°57'	149°	M	8.3
02-23	09h35.6m	-14°15'	09h38.0m	-14°29'	153°	M	8.4
02-28	09h18.3m	-09°58'	09h20.8m	-10°10'	153°	E	8.6
03-05	09h03.7m	-06°00'	09h06.2m	-06°12'	149°	E	8.9
03-10	08h51.6m	-02°27'	08h54.1m	-02°38'	143°	E	9.1

THIS MONTH'S METEORS

SHOWER NAME	DATES	DATE OF MAXIMUM	MAXIMUM VISUAL ZENITHAL RATE (per Hr.)	RADIANT POINT (ON MAX DATE) R. A.	DEC	VELOCITY km/sec.	NOTES
Delta Leonids	Feb 5 - Mar 19	Feb 26	<1	10h 36m	+ 19	23	Slow, bright meteors
Virginids	Feb 3 - Apr 15	Mar 13?	<1	12h 24m	+ 0	35	very broad stream complex radiant
Delta Normids	Feb 25 - Mar 22	Mar 14	<1	16h 20m	- 45	??	sharp maximum

ASTRO ADS

ASTRO ADS are free to all non-commercial advertisers wishing to sell astronomically related products or services. Please send your ad directly to the Editor, John P. Gleason, 5361 Port Sailwood Dr. Newark, CA 94560 **NO LATER THAN THE 15TH OF EACH MONTH.** Your Astro Ad will run approximately 3-months.

OLYMPUS Binocular viewer, attaches to 1 1/4" telescope focuser. High quality. Includes 2 pairs eyepieces. $350. Celestron nebula filter, new type, 1 1/4", perfect, $49. Call after 7 pm, Edward Hillyer, 209-463-1817 2/91

VISION Technologies (Everex) Video Digitizer board for IBM PC/XT/AT. 512 X 484 X 8 bits, 24 bit LUT. Real time (1/30 sec) frame grab from any RS170A or NTSC video source. Includes software developer tool kit. Never used, $850/obo. Also, National Instruments IEEE-488 controller for IBM PC/XT/AT. Half slot card w/ software. $40/obo. Contact Paul Keller, 408-227-5454.

MEADE Model 2045 4-inch Schmidt-Cassegrain telescope w/motor drive, field tripod, and equatorial wedge. Like new, $500 or best offer. Glenn M. Mueller, 415-326-7045 (home) or 415-854-5560 (work). 1/91

QUESTAR 3.5" with standard accessories and drive corrector. 1957 vintage in mint condition. Asking $2000. Also.....HP 41CV calculator w/hardcase and time module, survey pac, card reader, 30 cards, 2 rechargeable battery packs. 82143A printer also with charger and battery packs. Additional miscellaneous items and more. Asking $300. Contact Ed Stokke, 408-448-2181. 1/91

TELESCOPES AND ACCESSORIES - Meade model 622 6-inch f/3.6 wide field Schmidt-Newtonian on Meade equatorial mount. 2" focuser, 25mm eyepiece. Used twice. Excellent condition, $700. Telrad Finder, $30. Lumicon 80mm Super Finder, $150. Celestron 5X24 orange finderscope with bracket for C5, $20, Celestron 6X30 orange finderscope with bracket for C8, $20. Celestron 10X40 orange finderscope with bracket for C14 $45, Celestron 10X70 giant finder with bracket for C14, $140. Declination motor for sandcast C8, $20. Celestron T-Adapter for camera (T-ring for your camera not included), $15. Celestron tangent assembly for C8/C14 $175. Orion Telescope Center Dew gun, $5. 1 1/4" Optica filter set, green, red, yellow, orange, violet, blue, and Moon filter, 19mm clear aperture, $25. .965" star diagonal from C90, $5. Tuthill polar axis finder, $45. Meade #603 D.C. cord 25' with cigarette plug for use with #784 motor, $15. Meade #604 A.C. converter with 25' cord for use with #784 motor, $20. Home made 8-inch f/4 Newtonian optical tube assembly with Novak spider and mirror cell, Meade 680 focuser, end rings, dust caps, 2.60" secondary. Optical performance unknown (my first and last mirror). No finder or eyepiece included. Make Dobsonian mount and your all set, $175. (hardware alone a $164 value) All above equipment is in new or very good condition. Bill Dellinges, 415-792-9206

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SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP APPLICATION

MEMBERSHIP ONLY: $10 MEMBERSHIP/S&T: $28 JUNIOR (UNDER 18): $18

Name:_____ Please bring this form to any SJAA meeting, or send to:

Address:_____

_____ Jack Peterson, Treasurer
San Jose Astronomical Association
1840 Yosemite Dr.

Telephone(____)_____ Milpitas, CA 95035

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Please check type of membership and if NEW or RENEWAL

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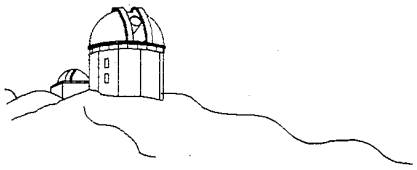

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