

EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION.



JANUARY 1989

* JANUARY 14TH 8 PM *
* RON DERE *
* "THE U.S. SPACE STATION PROJECT" *

DECEMBER 1 NEW YEAR'S EVE. NO OFFICIAL ACTIVITY PLANNED. EIGHT HOURS OF DARKNESS BEFORE MOONRISE WOULD YIELD A GOOD STAR PARTY TO USHER IN THE NEW YEAR. SUNSET AT 4:56 PM, ASTRONOMICAL TWILIGHT AT 6:34 PM, 42% WAXING MOON RISES AT 1:25 AM.

JANUARY 7 STAR PARTY AT HENRY COE STATE PARK. SUNSET, 5:00 PM, ASTRONOMICAL TWILIGHT, 6:37 PM. NEW MOON. MORNING TWILIGHT, 5:48 AM, SUNRISE, 7:25 AM.

JANUARY 14 GENERAL MEETING, THE SPACE STATION. 8 PM.

JANUARY 21 BOARD MEETING AT 6:30 PM.

JANUARY 28 STAR PARTY AT GRANT RANCH COUNTY PARK. SUNSET, 5:23 P.M.; ASTRONOMICAL TWILIGHT, 6:57 PM. 57% MOON RISES AT 0:13 A.M.. SUNRISE, 7:17 A.M.

FEBRUARY 4 STAR PARTY AT FREMONT PEAK STATE PARK. SUNSET, 5:32 P.M.; ASTRONOMICAL TWILIGHT, 7:03 P.M.. NEW MOON. MORNING TWILIGHT, 5:34 A.M.; SUNRISE, 7:06 A.M.

FEBRUARY 11 GENERAL MEETING. JOE WUJAK WILL TALK ABOUT ACTIVITIES AT THE VERY LARGE ARRAY, THE NATIONAL RADIO ASTRONOMY OBSERVATORY. RED CROSS BUILDING, LOS GATOS, 8:00 P.M..

FEBRUARY 18 SJAA BOARD MEETING AT THE RED CROSS, 6:30 P.M.. THEN AT 8:00 P.M., THE FIRST SESSION OF THE INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS LED BY JACK ZEIDERS. OPEN TO ALL INTERESTED IN LEARNING WHAT'S UP AND HOW TO FIND IT.

FIELD OF VIEW
BY: JOHN GLEASON and JIM VAN NULAND
13TH ANNUAL PHOTO FAIR

It's the largest photo swap meet on the West Coast! January 14, 9 a.m. to 4 p.m., 15th, 10 a.m. to 3 p.m. at the Santa Clara Co. Fairgrounds. Over 250 tables. Many thousands of photographic items available. Contemporary, classic & antique cameras, lenses, darkroom equipment, books, photo images & etc. Admission: Adults \$5, Under 12 free with adult, Seniors 65+ \$1. For more information or table reservations call 251-9197.

ASTROPHOTO VIII

You are invited to participate in the eighth Astrophoto Seminar, to be held in Orange County on Saturday, February 25, 1989. This all-day seminar and photographic exhibition draws about 200 amateur astronomers from the West, to hear papers on the latest astrophotographic techniques, see new equipment from displaying dealers, and exchange information with fellow astrophotographers. The photographic print and slide show has drawn over 200 entries at recent Seminars, and is a highlight, as astrophotographers from other countries and the U.S. show their best work with fully captioned entries. This year the

seminar will award cash prizes to several categories of astrophoto. The Proceedings book is included in the entry fee of \$20 for the day, or is available postpaid for \$15 and will be distributed at the door. DEADLINE FOR PAPERS AND ENTRIES FOR THE EXHIBITION IS JANUARY 15, 1989! Registration is available at the door but preregistration is recommended. Site will be either Cal State Fullerton or Cypress College. Please send \$20 registration and request for exhibitor's information to: Astrophoto VIII, 2215 Martha Ave. Orange, CA. 92667.

NO SMOKING

We have received a note from the Red Cross, stating that as of January 1, 1989 the building should be considered a "No Smoking" area. This really presents little trouble for us as those who do smoke, do so outside.

GRAZE REPORT

The November 30, 1988 graze of Regulus was a great success. Although threatening weather kept all but four observers away from the Crow's Landing site, the graze was readily seen through thickening fog. In the East Bay, about 40 observers watched under clear skies. The Nevada and two Texas expeditions were successful, too. The resulting profile will be published here when it comes available.

ELECTIONS, BOARD OF DIRECTORS

Five members will be elected or re-elected to the Board of Directors at the February meeting. Present members whose terms are expiring are: Tom Ahl, Steve Greenberg, Paul Mancuso, Duncan Munro, and Jim Van Nuland. All are standing for re-election. Additional nominees will be taken at the election. Directors whose term runs for another year are: Gene Cisneros, Connie Fleenor, Jack Peterson, and Brian Zehring.

BOOK PURCHASES

SJAA members may purchase all Sky Publishing Company publications at a discount of about 20%, by ordering through the Treasurer, Jack Peterson. He has the Tirion Atlas 2000 available from stock: most others will be special ordered. For books that cost over \$50, or for very specialized items, Jack requests payment in advance. For items that are not prepaid, Jack will hold them for two months after arrival (at least two general meetings). After 60 days they will be released and sold to the first taker. Jack has ordered a supply of the Uranometria 2000.0 Volume II, also sets of both volumes. In addition to Sky publications, Jack has a supply of the RASC Observer's Handbook for 1989.

INTRODUCTORY ASTRONOMY CLASS RESUMES

February 18th marks the beginning of the Introductory Observational Astronomy class. Our own Jack Zeiders will be conducting the class he originated three years ago. The class is free and open to anyone. SJAA members are encouraged to invite their families and friends to these "informal" classroom sessions. This highly successful class covers many fascinating subjects. Some of the topics covered are: How to recognize the constellations, how to use your telescope, astrophotography basics and deep-sky observing with binoculars. No pre-requisites are required. You don't need to own a telescope. Several trips are planned to the West Valley College planetarium and local observatories. Jack has also lined-up several guest speakers, experts in their fields of amateur astronomy. Class begins at 8 p.m. and continues once a month for the next 10 months.

THE EYE-ON-THE-SKY MAN, SHILOH UNRUH, VISITS SJAA

Denise Hutson reports: "The story surrounding the giant refractor atop Mt. Hamilton was shared by Shiloh Unruh, Lick Observatory Historian at the SJAA's General Meeting in November. For the 60 or so that attended, it was a special treat. If you missed it, you can look forward to an upcoming article on the same subject in the trade press. In the next issue, I'll be reporting on the December presentation by Dr. Randolph Pozos covering the controversial "Face on Mars." Until then, have a Happy New Year!" (Dr. Pozos substituted for Richard Hoagland who could not make it to our November GM. - ed.)

NEW GENERAL MEETING DATES

A new year is upon us. We are adjusting our General Meeting date from the first Saturday of the month to the second Saturday. This will allow for New Moon star parties to be scheduled without interfering with our General Meetings.

JANUARY STARRY NIGHTS BY: RICHARD STANTON

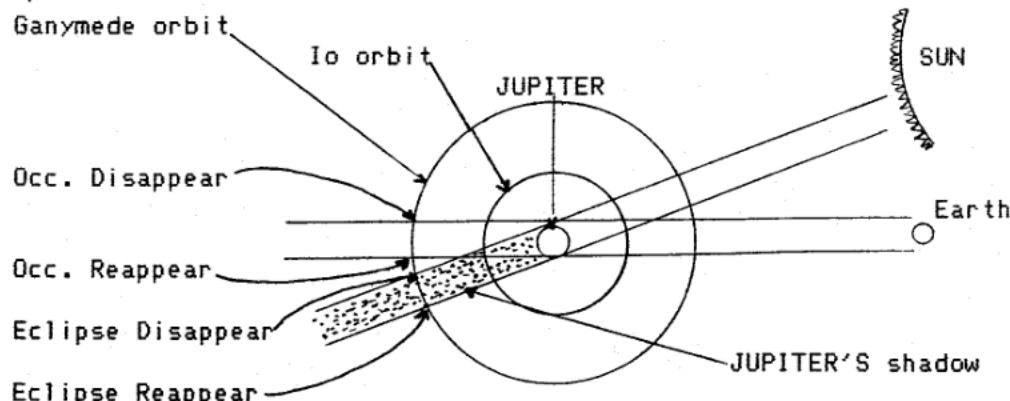
METEORS - January brings the maximum of two showers. The first maximum for the month is the 2nd for the minor shower the Coma Berenicids. The meteor stream from which these meteors emanate interact with the earth's orbit around the sun from December 12th through January 23rd. While there is no Zenith Hourly Rate predicted, the few or many meteors you see from it are among the fastest, streaking along at 65 kms.

The second shower of the month is major. The Quadrantids shower is one of the competitors for the heaviest shower each year at a Zenith Hourly Rate of 50+ meteors per observer. There is some speculation that the reason this shower is not as well known or observed as the Perseids is due to its occurrence in the chilling winds of winter. Another possibility is that the high hourly meteor rate only lasts for a few hours around the time of maximum or interference from the moon. This year, the maximum occurs on January 3rd at 10 hours U.T. near a New Moon. The radiant coordinates for the shower are 15:28+50. To convert U.T. to Pacific Standard Time simply deduct eight hours.

GALILEAN SATELLITES - As Jupiter travels along in Taurus this month it will be rising around 13:00 hours and setting around 02:00 hours PST each evening. The prime dark observing weekends during January are 12/31-1/01, 1/07-1/08, and 1/28-1/29. The Galilean events below are selected for these weekend periods. Remember that the moons of Jupiter can be observed with binoculars or the smallest of telescopes. The times and dates have been converted to Pacific Standard Time.

Dec 31 18:08	- Io	- Reappears from Eclipse
Jan 02 00:08	- Europa	- Ingress Transit
02:00	- Europa	- Shadow Ingress Transit
02:25	- Europa	- Transit Egress
Jan 06 19:31	- Io	- Ingress Transit
20:32	- Io	- Shadow Ingress Transit
21:41	- Io	- Transit Egress
22:42	- Io	- Shadow Egress Transit
Jan 07 16:51	- Io	- Disappears in Occultation
20:03	- Io	- Reappears from Eclipse
Jan 08 16:08	- Io	- Transit Egress
17:11	- Io	- Shadow Egress Transit
Jan 09 02:31	- Europa	- Ingress Transit
Jan 28 22:23	- Io	- Disappears in Occultation
Jan 29 01:49	- Io	- Reappears from Eclipse
19:24	- Ganymede	- Disappears in Occultation
19:32	- Io	- Ingress Transit
20:48	- Io	- Shadow Ingress Transit
21:42	- Io	- Transit Egress
21:43	- Ganymede	- Reappears from Occultation
22:58	- Io	- Shadow Egress Transit

If you have been trying to figure out how the Occultation/Eclipse phenomenon noted above are distinguished, the drawing below should be of some help. I have adapted it from the RASC Observer's Handbook.



JANUARY'S DEEP SKY CHALLENGE - Anybody ever visually detected the Flaming Star Nebula? This is a combination Emission/Reflection Nebula designated as IC 405

in the constellation of Auriga and is associated with the runaway star AE Aurigae. It's size is 30' x 19' and can be found at 05:15 +34:16. It's suggested that you go after this object with a 20cm (8 in.) or larger telescope. The star AE Aurigae, and unusual O type variable, is the source of illumination for the nebula. It is estimated that the actual diameter of the nebula is nine light years. See your Burnham's Handbook, page 285 for more information on this system.

ASTRO ADS

3-INCH EQUATORIAL REFRACTOR, superb resolution, "Passed" from J.T.I.I (Japan Telescope Inspection Institute); with 12 x 40 finder and star diagonal. \$400 firm. Contact: Edward Hillyer, P.O. Box 6065, Salinas, Ca. 93912 408-424-0460 1/89

CELESTRON C-11 SPECIAL, one of ten made for NASA laser ranging program, special precision optics and focuser. Wedge and tripod included. Best offer over \$4000. Numerous accessories, eyepieces and Anvil cases also available, prices negotiable. Write 110 Sutter Street, Suite 200, San Francisco, CA. 94104 or call 415-492-9189. 1/89

WANTED: 10.1" Coulter Odyssey telescope or 10" Newtonian with Dobsonian mount. Maximum price \$350. Contact Roger Hall at 408-732-2803 or 408-245-1741, 11:00 a.m. to 8:30 p.m. 12/88

MEADE 8-inch f/6 Model 628 Newtonian Reflector with RA and DEC motors, drive corrector with slow motion control joystick, 40mm wide-field eyepiece, 50mm f/12 guide telescope, 6 X 30 finderscope, equatorial mount, accessory tray, transportation cradle for scope. All for \$800 or best offer. Contact: David Ferry, 408-259-2366 after 5:00 p.m. 12/88

MEADE 2080 LX-5, like new, used 4 times. includes: Meade counter weight set, Meade Variable polarizing system, Meade variable focus camera adapter, Meade focus back, Meade super Plossl 20mm eyepiece, Meade dewshield, Meade piggyback camera mount, Orion t-mount & adapter, Orion moon, orange, violet, blue, and yellow/green filters, Orion sky glow filter, Celestron 26mm Plossl & 25mm Kellner, Tel-Rad view finder, Jim's Moto-Focus, Orion dew zapper, Orion accessories case (large), Olympus OM-1 camera with f/1.8 50mm lens, deluxe flexible cable release, misc. extras, and Tele-Vue 9mm Nagler & 55 Plossl. (most original boxes available.) Sold as package deal only! \$1750.00 FIRM!! Don Grabski. 408-292-9144 (home), 408-925-9650 (voice pager). 12/88

WANTED: Issues 17 and 24 of Telescope Making magazine. I have extras of number 26, and 27 to swap, or will pay reasonable price. Also desire numbers 10 to 15, and 1 to 5, in descending order. Contact: Jim Van Nuland, (408) 371-1307, 10 am to 11 pm. 11/88

4" BRASS REFRACTOR for sale. Unitron lens with a solid brass tube and 8X50 brass finder. Super Polaris mount with stepper motor drive. Tripod is hand rubbed mahogany. Also includes a drive corrector and portable power supply. Excellent optics and a real looker. \$950. Call Jim Baumgardt at: (415) 692-5337 after office hours. 11/88

MEADE 2080 GEM 8". It comes with 3 eyepieces; Meade Series 4000 super Plossl 26mm, 9.7mm, Celestron 2X Barlow lens, all 1 1/4". \$700 Contact: Julie Ide 708 Columbia St. Santa Cruz, CA. 95060 (408) 423-6495. 11/88

CELESTRON SUPER C8 with wedge, Meade heavy duty tripod, Meade drive corrector, 6.5 Amp/hr battery with charger, Celestron 45mm Plossl eyepiece, Celestron 7mm Ortho. \$750. Don Irving 978-6114 evenings before 9 pm. 11/88

CELESTRON COMET CATCHER with beautiful vernier Dobsonian mount. Telrad finder, Televue 26mm Plossl. \$350 Don Irving 978-6114 evenings before 9 pm. 11/88

FOR SALE: Super Polaris C8 w/starbrite coatings, Sky Sensor computer control, piggyback mt. dewcap, 25mm Plossl, \$925. Celestron 5 w/wedge and tripod, star diagonal, 25mm and 7mm ortho. eyepieces, image erector, tripod leg height adjusters, dewcap, \$ 575. Comet Catcher (Schmidt-Newtonian), w/tube rings for Super Polaris or Polaris mount with guidescop attachment, T-adapter, 25mm eyepiece, Celestron deluxe 2X Barlow, \$300. Dual axis drive corrector for Super Polaris mount, \$125. Meade 15.5mm Research Grade Erfle, 1.25", \$50. Meade 32mm Research Grade Erfle, 2.00", \$80. All of the above equipment has new appearance and is in excellent operating condition. Jim Molinari. (408) 255-7030 (H), (408) 298-7557 (W). 11/88

FOR THE ASPIRING ASTROPHOTOGRAPHER. Classic Orange Celestron C8 with wedge, adjustable tripod, and everything you need for astrophotography except a camera. Equipment includes : Accutrack 2120 dual axis drive corrector with joystick hand controller and declination motor, Jim's Mobile electric Motofocus, 8X50mm finder, setting circle lights, work table, counterweight bar assembly, dew shield, off-axis guider plus 12.5mm Orthoscopic illuminated

reticle eyepiece for deep-sky astrophotography, tele-extender tube for close-up planetary and lunar photography, piggyback camera mount for wide-field astrophotography, 10mm Plossl and 25mm Orthoscopic eyepieces, ZX Barlow, accessory case, The Amateur Astronomer's Handbook, 3rd Ed., Webb Society Deep-Sky Observer's Handbooks, Vols. 1 to 5, The Cambridge Astronomy Guide, plus more! Make Offer! Contact Ron at 415-278-3335 for details. Evenings, before 9:30 PM, please. 10/88

BAUSCH & LOMB 60mm telescope. Telescope is only 5 months old and in excellent condition. \$190. For more specific details contact: Gary Mathers 408-286-4004, 707-576-0778. 10/88

CELESTRON Super C8+ with tripod and wedge. 1 year old, mint condition, original boxes. Includes 2.5x TeleVue Barlow, dew cap, star diagonal, 2 eyepieces, etc. Paid \$1200: will sell for \$900 or best offer. Contact: Brett Johnson at work 408-553-2965 or home 408-293-2053. 10/88

THE GREAT RED SPOT OF JUPITER BY: JIM VAN NULAND

Recent observations with moderate seeing gave no sign of the white ovals that I'd reported last month.

A reader has noted that the times given in Sky & Telescope and in Astronomy magazines differ, and that the times given here differ most of all! Why? The S&T predictions assume that the Spot will remain at a fixed longitude throughout the month. The predictions that I prepare (for Astronomy and this bulletin) attempt to predict the longitudinal drift. To this add differing lead times, and you have a few minutes difference.

In addition, the present table contains an anti-anticipation factor -- a random amount, 0 to 9 minutes, has been subtracted from the calculated time. This prevents an observer from "calling" the transit at the expected time. If you are making timings, contact me for the unfudged predictions.

The predictions are corrected for the changing aspect, phase, and light-time. At the given times, the Spot will be facing directly toward Earth, and thus will appear central on the apparent disk of the planet. Observations may be made for over an hour before and after that time.

Great Red Spot on Meridian PST

da	mo	d	h	m	da	mo	d	h	m	da	mo	d	h	m
Sa	12	31	10	2 pm	Sa	1	14	11	39 pm	F	1	27	7	28 pm
Su	1	1	5	54 pm	Su	1	15	7	30 pm	Su	1	29	9	9 pm
M	1	2	11	47 pm	Tu	1	17	1	24 am	Tu	1	31	10	41 pm
Tu	1	3	7	38 pm	Tu	1	17	9	6 pm	W	2	1	6	41 pm
Th	1	5	1	18 am	Th	1	19	10	50 pm	F	2	3	0	24 am
Th	1	5	9	20 pm	F	1	20	6	43 pm	F	2	3	8	17 pm
Sa	1	7	10	58 pm	Su	1	22	0	32 am	Su	2	5	9	52 pm
Su	1	8	6	48 pm	Su	1	22	8	16 pm	M	2	6	5	43 pm
Tu	1	10	0	28 am	Tu	1	24	10	2 pm	Tu	2	7	11	34 pm
Tu	1	10	8	28 pm	W	1	25	5	54 pm	W	2	8	7	27 pm
Th	1	12	9	59 pm	Th	1	26	11	33 pm	F	2	10	8	58 pm
F	1	13	5	52 pm										

SPACE PROGRAM UPDATE BY: BOB FINGERHUT

SHUTTLE ORBITER ATLANTIS RETURNS FROM SECRET MISSION

Atlantis landed at Edwards AFB on Dec. 6 after 5 days in orbit. Atlantis was mounted on the back of its 747 carrier and returned to Cape Canaveral the week of December 12. There was more damaged tiles observed landing than have been seen before. Around 125-175 tiles will have to be replaced. It is believed that the damage was caused by ice falling off the external tank during launch. The damage is not expected to delay Atlantis' next flight on April 28, 1989, which is sending the Magellan spacecraft to Venus.

DISCOVERY TO FLY NEXT

Discovery is scheduled for a February 18th launch with a TDRS satellite. The first stage of the Inertial Upper Stage booster that will be attached to the

TDRS will be replaced in late December. The nozzle cone of the upper stage was destroyed on December 1 when a technician tripped on his lab coat, lost his balance and kicked it, causing a 3 inch split in the carbon-carbon material.

SOUIETS BUILDING ORBITAL INFRASTRUCTURE

The first large building-block module for the MIR space station is being ground tested. Its launch is scheduled for April 89. The module is 13.45 ft. in diameter, 41 ft. long and weighs 45,000 lbs. It will nearly double the MIR's internal volume. The module contains a manned maneuvering unit (MMU) similar to one flown by U.S. shuttle astronauts. Improved versions of the Progress and Soyuz transport vehicles are being developed. A new transport airplane for the Soviet shuttle and large Energia components was unveiled in December. It is called Mria (The Russian word for dream). With six engines and twin vertical tails, it is the worlds largest airplane. The Soviets have released details of their new shuttle. It is 118 ft. long, has a 78 ft. wing span and a gross launch weight of 235,000 lb. The U.S. shuttle is 122 ft. long, has a 78 ft. wing span and a gross launch weight of 240,000 lb. The Soviet shuttle has a 15 x 60 ft. payload, the same as the U.S. shuttle. The Soviet shuttle can launch payloads weighing up to 67,000 lbs and return up to 45,000 to earth. The U.S. shuttle can launch payloads up to 57,000 and return up to 32,000 lbs to Earth. The Soviets' shuttle crew cabin contains 2472 cu. ft. The U.S. shuttle contains 2325 cu. ft.

EUROPEANS SELECT TITAN PROBE FOR NEXT SCIENCE PROJECT

The European Space Agency (ESA) has selected its next space science mission from a field of five candidates. The Titan probe will deployed from the U.S. Saturn orbiter (Cassini mission) that is scheduled for launch in 1996. Cassini is planned to flyby an asteroid in 1997, flyby Jupiter in 2000 and arrive at Saturn in late 2002. The Saturn orbiter should gather data until 2006.

GAMMA RAYS INTERFERING WITH SCIENCE SATELLITES

The source of the gamma rays is space nuclear reactors carried on Soviet radar ocean reconnaissance satellites. They have affected gamma ray detectors on satellites such as the Solar Maximum Mission satellite. The interference has been recognized for several years but has only recently been declassified.

DOUBLE, TRIPLE AND MULTIPLE STARS BY: PATRICK DONNELLY

This is the time of the year when every amateur astronomer has one of the most difficult decisions to make. "Should I explore Orion tonight or something else?" Most of the time the decision is made in favor of Orion and rightly so. There is so much to observe in Orion one could spend an entire season with the constellation and still not observe everything. For double stars Orion is no exception. Here are some of the double star wonders to be found in Orion:

- * Best Multiple Star in the sky (Theta 1 Orionis).
- * Eight Bright triple/Multiple Stars.
- * Over 250 doubles with Primary brighter than 8th magnitude and secondary(ies) brighter than 11th magnitude.

Begin your tour at the Orion Nebula. At the center of the nebula is the Trapezium (Theta 1 Orionis) consisting of 6 (not 4) close stars. I have seen all six under relatively low power from my home near downtown Morgan Hill under not so perfect conditions with my 8" SCT. This area should be viewed for quite some time. Be sure to take in the beauty. Also, while at the same time note the other triple star, Theta 2 Orionis. This triple consists of three (3) stars aligned in an approximate straight line with each end star separated from the middle star by about 100". While observing this region consider the fact that you are looking at a stellar nursery several hundred light years away.

After the Orion nebula move the telescope down to Rigel (Beta Orionis). Rigel has a 7th magnitude companion at about 9" from the primary component. Rigel is interesting because this double reminds me of what one would expect to see, if one looks at Sirius. Use high power to observe the double for the best view. Following Rigel, move the telescope up to Iota Orionis. This star is a triple system with a mag. 3 primary, a mag. 7 companion at 112", and a mag. 11 companion at 50". Also, note another double in the same low power field; Sigma 747. This is a 5.5 and 6.5 mag. system separated by 36".

After Iota move the telescope up to Zeta-Sigma Orionis area. In your quests to see the Horsehead nebula, you've probably overlooked the 3 multiple star systems in the same field of view. The first is Zeta Orionis. This is a triple star consisting of mag. 2, 4.2, and 10 components. The 4.2 component is 2.5" from the primary, and the other is 58" from the primary component. The close components are a true physical pair, but the dim component appears to be only an optical companion. From Zeta move to Sigma Orionis. Sigma consists of

four (4) components more or less in a straight line. The magnitudes and separations are 4, 7.5, 10, & 6.5 with the dimmer components at separations of 12.9", 11.2", and 42" from the primary. In the same high power field of view is a second triple star Sigma 761. It consists of three (3) mag. 8 stars with separations of 8.5" and 69". Sigma Orionis and Sigma 761 are apparently part of the same vast physical system. Moreover, the brightest member of Sigma Orionis is a close double at 0.2" and one other unseen companion exists. Therefore, this system consists of at least nine stars.

The final stop is at Lambda Orionis. The star is a quadruple star. Under low power its two bright components at magnitudes 4 and 6 are an extremely pretty sight with a 4.4" separation. Under high power and dark skies it has 2 dim, mag. 11 companions at 29" and 78". No motion has been detected for all four members, although spectroscopic parallax measurements suggest a true system. Let me conclude by just listing some of the other doubles in Orion:

NAME	MAGNITUDE	SEPARATION
DELTA	A-2.5 B-6.9	53"
PSI	A-4.6 B-8.3	3"
RHO	A-4.6 B-8.3	7"
ETA	A-4.0 B-5.0	1.5"
23-ORIONIS	A-5.0 B-7.1	32"
33-ORIONIS	A-6.0 B-7.5	2"

COMET COMMENTS BY: DON MACHHOLZ

Comet activity remains low. No bright returning comets are expected until the middle of 1989, so if we're going to observe something before then, it will have to be a new discovery.

Periodic Comet Ge-Wang (1988o): Ge and Q. Wang discovered this object on plates taken in China on Nov. 4. They used a 24" Schmidt to find the 17th magnitude comet. Prediscovery images were later found by the Shoemakers and T. Kojima. The comet orbits the sun every 11.4 years and is not expected to get any brighter.

SEEKING COMETS

For the past few months we've looked at the "times" during which comets are discovered. For example, we've seen a dramatic increase in photographic comet discoveries during the past decade. We've also seen that more comets are found in the second half of the year than in the first. Today we subdivide all comet discoveries into two categories: morning and evening. More accurately, this is defined by the position of the comet at discovery: morning comets are found within twelve hours right ascension preceding (west of) the sun, those in the evening sky are within twelve hours following (east of) the sun.

It just so happens that comets in the evening sky are found by amateurs during their evening time, while those in the morning sky are found during the morning hours. This is because we look toward the west in the evening and the east in the morning.

Does it make much difference whether comets are found in the morning or evening sky? It does to the active comet hunter. Although some of us enjoy searching any place and at any time, it is more efficient to search where comets are most likely to be found.

In 1967, Dr. Edgar Everhart published a comprehensive study of 337 long-period comets discovered between 1840 and 1967. He found that, although 60% of the comets were found in the morning sky, about 75% of all comets were first discoverable in the morning sky. He added that during this time period there was always a 50% chance that a yet-to-be-discovered comet was in the sky. For an observer at 40 degrees N. latitude this dropped to a 33% chance - 11% for the evening sky and a 22% for the morning sky.

In this study Dr. Everhart used a "threshold" magnitude of 13 (in dark sky), a time period when there were few Southern Hemisphere comet hunters to pick up bright comets south of the equator, and the assumption that each comet behaved "normally". In a subsequent paper he suggested that only 20% of all discoverable comets were indeed found during those years.

In my study of visually-found comets (1975-84), I saw that evening comets generally became discoverable in the evening sky and morning comets in the morning sky. However, my sample was of only 33 comets, my threshold magnitude was twelve, and the southern sky was well-covered. So I'm not sure if 75% of all comets still become first discoverable in the morning sky, but I do think we're picking up a greater percentage of discoverable comets. We're probably

up to about 40% now.

We do know that morning sky discoveries are generally clustered, while evening finds are more spread out. Morning sky comets are also brighter at discovery, travel faster and are more likely to be in retrograde orbits, than evening sky comets. In future months we'll look at those differences more closely.

In the following table we see the tabulation of the 44 comets found visually by amateurs from Jan. 1975 through Nov. 1988. The month is listed along the left side. Then, for both morning and evening discoveries we have the comet discovery position in relation to the equator. Next we show the observer's (discoverer's) location in relation to the equator. In the case of multiple discoveries, all the observers are listed. Finally, we list the number of visually found comets coming to perihelion (their closest point to the sun) for each month. The column at the far right totals both the morning and evening subtotals.

Sixty percent of the comets were found in the morning sky. Evening comets are often picked up in the northern sky, while morning comets were found in the southern sky. Also baffling: nearly two-thirds of these comets come to perihelion during the second half of the year.

MONTH	MORN. DISC.					EVEN DISC.					TOTALS				
	COMET		OBSVR		PERI	COMET		OBSVR		PERI	COMET		OBSVR		PERI
	N	S	N	S	DATE	N	S	N	S	DATE	N	S	N	S	DATE
JAN.	1	1	1	1	2	1	2	5	0	2	2	3	6	1	4
FEB.	0	1	0	1	1	0	1	0	1	1	0	2	0	2	2
MAR.	1	1	1	1	1	0	1	0	1	1	1	2	1	2	2
APR.	0	0	0	0	1	1	0	1	0	1	1	0	1	0	2
MAY	4	0	7	0	3	0	0	0	0	0	4	0	7	0	3
JUN.	0	1	0	1	1	0	1	0	1	1	0	2	0	2	2
JUL.	1	3	5	1	1	1	0	2	0	1	2	3	7	1	2
AUG.	1	0	1	0	3	1	1	1	1	0	2	1	2	1	3
SEP.	0	1	1	0	4	3	1	4	1	1	3	2	5	1	5
OCT.	3	2	7	2	2	1	0	1	0	4	4	2	8	2	6
NOV.	0	2	1	1	1	2	0	3	0	3	2	2	4	1	4
DEC.	1	2	1	2	6	1	0	1	0	3	2	2	2	2	9
TOTAL	12	14	25	10	26	11	7	18	5	18	23	21	43	15	44

Don Machholz (408) 448-7077

SJAA MEETING AND STAR PARTY LOCATIONS

GENERAL MEETINGS

Once a month the SJAA holds a General Meeting at the Red Cross building in Los Gatos California. Guest speakers are invited to give talks on a wide range of astronomical topics which have included equipment and slide presentations. This is also the location for the SJAA's "Indoor Star Parties", informal sessions where members gather to share their astronomical interests. Whatever your interest, astrophotography, deep sky observation, telescope making, or just arm chair observing, you'll find a friendly atmosphere at all of our meetings.

The Red Cross building is located at 18011 Los Gatos-Saratoga Rd. From Hwy 17 take the Hwy 9 (Saratoga) exit and continue west up the Los Gatos-Saratoga road for about 0.6 miles. Turn right at Rose Ave. Then turn right immediately into the parking lot of the Post Office and Red Cross building. Doors open at 7:45 PM, with General meetings beginning at 8 PM. General Meetings are currently held on the 1st Saturday of each month.

INDOOR STAR PARTIES

Occasionally there are a few Saturday evenings set aside for informal gatherings of amateur astronomers to share their common interest in astronomy, to "talk shop", or to simply enjoy the company of friends. Members are encouraged to bring in telescopes and accessories to share with the group. Typically there will be several telescopes operating in the parking lot or there will be a slide show of recent astrophotography and star party events in progress in the meeting hall. The SJAA also holds it board meetings during this time as well as an introductory astronomy workshop that is conducted once a month.

FIELD EXPEDITIONS

On the Saturdays closest to the New Moon, the SJAA will conduct a "Star Party" for astronomical observation at a designated location. Several times a year these star parties are held close to San Jose while others are held as far away as Yosemite national Park. Watch the EPHEMERIS for star party locations.

FREMONT PEAK STATE PARK

The most popular of locations for bay area amateur astronomers is Fremont Peak State Park. Located 70 miles south of San Jose near the town of San Juan Bautista, Fremont Peak rises nearly 3000 ft. above the valley floor. For two decades amateurs have gathered at the "Peak" during New Moon weekends for serious deep sky observing and astrophotography. To get to Fremont Peak from San Jose, take Hwy 101 south towards Salinas. Then take Hwy 156 east (San Juan Bautista exit) for 3 miles to a yellow flashing light. Turn right and go about 1/4 mile to where the road reaches a "Y". Veer left for about 25 yards and then go right. (Watch closely for the Fremont Peak sign) Follow the Canyon Road for about 11 miles up into the park. The SJAA sets up in Coulter Camp. It's visible on your right as you first drive onto the main area of the park. Expect to find a lot of astronomical activity here every clear New Moon weekend. Arrive early if you are setting up equipment. 50 to 100 telescopes are not uncommon at Fremont Peak during the summer months.

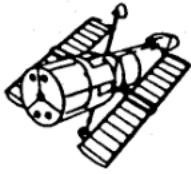
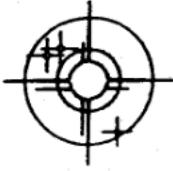
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SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP APPLICATION

MEMBERSHIP ONLY: \$10 MEMBERSHIP/S&T: \$26 JUNIOR (UNDER 18): \$18

Name: _____

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

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1840 Yosemite Dr.
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