

EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION



JULY 1989

* JULY 8TH 12 PM *
* ANNUAL SJAA PICNIC *
* GRANT RANCH PARK ROSE GARDEN *

- JUNE 30 - JULY 1 YOSEMITE STAR PARTY.
- JULY 1 STAR PARTY AT FREMONT PEAK STATE PARK, FOR THE UNFORTUNATES WHO ARE NOT GOING TO YOSEMITE. TIMES FOR THE PEAK: SUNSET, 8:29 PM; ASTRONOMICAL TWILIGHT, 10:20 PM. MORNING TWILIGHT, 4:00 AM; SUNRISE, 5:51 AM. THE 2 $\frac{1}{2}$ MOON IS VERY NEAR THE SUN.
- JULY 8 ANNUAL SJAA PICNIC WILL BE HELD IN THE ROSE GARDEN SITE OF GRANT RANCH PARK, STARTING ABOUT NOON.
- JULY 15 SJAA BOARD MEETING AT THE RED CROSS, 6:30 PM. INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS AT 8:00 PM.
- JULY 22 INDOOR STAR PARTY AT THE RED CROSS BUILDING, NO SCHEDULED PRESENTATIONS, SO BRING DOWN THOSE LATEST ASTRO-SLIDES AND NEW EYEPIECES TO SHOW OFF. SUNSET, 8:23 PM; NAVIGATIONAL TWILIGHT, 9:29 PM. THERE'S SOME DARK TIME BEFORE THE 7 $\frac{1}{2}$ MOON RISES AT 10:51 PM.
- AUGUST 5 STAR PARTY AT FREMONT PEAK STATE PARK. CONJUNCTION OF MERCURY AND MARS. TIMES FOR THE PEAK: SUNSET, 8:08 PM; ASTRONOMICAL TWILIGHT WOULD BE 9:47 PM. THE 19 $\frac{1}{2}$ MOON SETS 10:05 PM. MORNING TWILIGHT, 4:37 AM; SUNRISE, 6:16 AM.
- AUGUST 12 GENERAL MEETING AT THE RED CROSS BUILDING. SPEAKER TO BE ANNOUNCED.
- AUGUST 19 SJAA BOARD MEETING AT THE RED CROSS, 6:30 PM. INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS AT 8:00 PM.
- AUGUST 26 STAR PARTY AT FREMONT PEAK STATE PARK. TIMES ARE: SUNSET, 7:42 PM; ASTRONOMICAL TWILIGHT, 9:14 PM. THE 15 $\frac{1}{2}$ MOON RISES AT 3:55 AM; MORNING TWILIGHT WOULD BE 5:01 AM. SUNRISE, 6:33 AM.

FIELD OF VIEW
BY: JOHN GLEASON & JIM VAN NULAND
MEMBERSHIP RENEWAL TIME

All members who receive Sky & Telescope as part of their membership dues should have received a renewal card by now. Please mail your \$26 membership renewal fee directly to Jack Peterson (use the handy form on the back page). Make checks payable to "SJAA". Jack has been inputting renewal data into the mailing list which has resulted in a delay of the printing of address labels for the Ephemeris. This is why you have been receiving your bulletin rather late in recent months. Jack has a better handle on things and promises to get the mailing labels to me earlier. Thank you for your patience. To all members, please be reminded that this issue of the Ephemeris will be your last issue if you do not renew your membership.

SJAA ANNUAL PICNIC AT GRANT RANCH PARK

Members will not want to miss the club's annual family gathering and picnic on July 8. There will be an installation of officers and a presentation of the A.B. Gregory award. Picnic festivities start around noon. Typically this is a pot luck affair with the club providing soft drinks, hot dogs, and hamburgers. This is an excellent opportunity for new members to get acquainted with the SJAA on a more informal basis. An informal star party will follow (the moon will be near first quarter) so bring your telescope. Bob Fingerhut should have his Hydrogen-Alpha solar filter running for spectacular solar viewing. To get to Grant Ranch just take the Mt. Hamilton road east as if you were headed to Lick Observatory. Grant Ranch is located in Halls' Valley (about half way to the observatory) with the entrance to the park just past the Quimby Road intersection. The club picnic is to be held in the Rose Garden part of the park. Watch for direction signs once you get into the park. Bring your Frisbee!!

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.

FOR SALE: KOLKACH ROLL FILM COLD CAMERA. Takes 35mm cassettes. As new, complete with focusing screen/eyepiece, dry ice reservoir, full instructions; at 1976 price (\$200). Steve Greenberg (415) 423-4899 days or (209) 239-2154 after 6 pm.

CELESTRON SUPER POLARIS C8: Very good condition, with dew shield, and f/5 telecompressor lens assembly. Celestron 26mm Plossl eyepiece, 8X50 - scratchbuilt - finderscope. \$800 firm. (408) 926-8190 7/89

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MEADE 8-INCH SCHMIDT FOR SALE: The optics are in excellent condition and is fully functional. When I purchased this scope a few years back I was told the optics were 20th wave. Meade provided this scope to a prominent astronomer for his trip to Hawaii. The owner some years later sold the scope and I purchased it. View finder, tripod, clockdrive, 40mm, 25mm, 9mm, and 6mm Meade orthoscopic eyepieces, 19mm Plossl, 12mm guiding eyepiece, 2" ring adapter, 40mm, 55mm 2" eyepieces, Barlow 1.5x-2x-3x (variable), Dew Zapper, Accutrac Tracker, Motorized focus attachment, travel cases, adapter rings and tubes for photography. Asking \$1500. Call: Dave at home (408) 379-9228 or work (408) 370-5245. 7/89

FOR SALE: Celestron C8 with wedge, tripod, dual axis drive corrector, plus everything additional you need to begin both observing and astrophotography except a camera body. Equipment list includes: electric Motofocus, 8X50 finder, counterweight bar assembly, off-axis guider plus 12.5 mm Orthoscopic illuminated reticle eyepiece, 10 mm Plossl and 25 mm Orthoscopic eyepieces, 2x Barlow, The Amateur Astronomer's Handbook, Webb Society Deep-Sky Observer's Handbook (Vols. 1 to 5), The Cambridge Astronomy Guide, Astrophotography II, plus much more. \$1000 or best offer. Contact Ron at (415) 278-3335. Evenings, before 9:30 PM, please. 6/89

6-INCH REFRACTOR, f/14 on Altazimuth mount, made by Tinsley Lab around 1946-1949. Good condition and beautiful performance. Will take best offer above \$1700. Edward Hillyer, P.O. Box 6065, Salinas, CA 93912. (408) 424-0460 evenings. 6/89

CELESTRON 8 with special coatings, tripod, telescope carrying case, equatorial wedge, star diagonal, 40mm ocular, 25mm ocular, illuminated reticle ocular assembly, off-axis guider body, tele-extender and camera adapters, home-made counter weights, astrophotography basics guide. Price \$1050 (Sorry, but no personal checks) Contact: Steven M. Cohn (415) 272-7464, 655-6807 5/89

CELESTRON 8, complete with various eyepieces, Barlow lens, wedge, tripod, DOA drive corrector, and carrying case. For more information call: Ralph Jacobson, 1-415-454-1185. Leave message if not at home. 4/89

COMET COMMENTS BY: DON MACHHOLZ

A faint new comet has been discovered recently. Meanwhile, we are still awaiting the recovery of periodic Comet Brorsen-Metcalf. This comet is either fainter than expected, or it is not on the predicted course. Nevertheless, since it may be recovered by the time you read this, we'll examine its history, orbit and observing conditions.

Periodic Comet West-Hartley (1989k): A bit of detective work was needed to confirm this comet. Richard West found, on May 11, a cometary object of 17th magnitude on a plate exposed two months earlier. It was moving either NE or SW; the direction being impossible to discern from a streak on a photo. An examination of an April 28 exposure seemed to eliminate a SW long-period orbit. In late May Malcom Hartley found a comet in the SW direction, and 15 degrees away, which now appears to be the same object as that found by West. A very rough orbit suggests that this comet has an orbital period of six years and that it will remain faint.

Periodic comet Brorsen-Metcalf: This comet was discovered by Theodor Brorsen from Germany on July 20, 1847. It was then magnitude 9.5 and in the morning sky, 83 degrees from the sun. It was soon determined that perihelion would occur on Sept. 10, at a distance of 0.49 AU. The comet reached magnitude 6.5 with a tail length of under one degree; it was last seen on Sept. 13.

Although this comet was expected to return in 1922, the object that the Reverend Joel Metcalf picked up on August 21, 1919 turned out to be this comet. Metcalf's find was magnitude 5.5, and 140 degrees from the sun in the morning sky. The comet approached to within 0.20 AU of the earth in early September, and was closest the sun on Oct. 17. On Oct. 22 the tail separated from the head, but re-formed a few days later.

Following this find on Aug. 21, Metcalf continued sweeping for comets. On the next night he independently discovered a comet (Kopff) that has been recovered a few weeks before. The following night (Aug. 23) he discovered yet another comet.

We now await the first predicted return of Periodic Comet Brorsen-Metcalf. Calculations suggest that it will be at perihelion on September 27.5 at 0.479 AU. The orbital period is 70.6 years, comparable to Halley's Comet's 76 years. Most astronomers expected that it would have been recovered by now. So why hasn't it shown up? It could be slightly off course, arriving earlier or later than we think. By early June large telescopes from around the world searched to about stellar magnitude 20, but only in the small region along the suspected track. Comet hunters, conducting nightly searches, haven't picked it up in other areas either.

On the other hand, the comet may be dimmer than predicted. On the previous two visits, this comet has never been observed for more than 57 days before perihelion and 32 days after. A stable light curve is uncertain.

If Periodic Comet Brorsen-Metcalf never shows up, this would be only a mild surprise, as comets are unpredictable. Besides, both Brorsen and Metcalf have each lost a comet due to extensive fading.

Should the comet be reasonably well on course, and of "normal" magnitude, amateurs worldwide will be able to observe it from early July through mid-August. Then Southern Latitude observers will lose it over their northern horizon, while those at the equator will lose the comet two weeks later. For Northern Hemisphere comet watchers it becomes circumpolar during August and is well-placed until early October. It will always be in the morning sky, and all latitudes will have difficulty picking it up during October when it rises near morning astronomical twilight. The comet becomes better placed again in November.

Brightness predictions depend upon which formula you use. The comet may be magnitude nine at the beginning of August, reaching naked-eye visibility during the month of September - perhaps remaining so for the full month. By late October it should be magnitude ten, attaining magnitude twelve by the end of November.

Periodic Comet Brorsen-Metcalf should closest to the sun on Sept. 27 at 0.47 AU, and closest the earth on Aug. 20 at 0.40 AU. All in all, considering the comet placement and magnitude, it should appear at its best as seen from the Northern Hemisphere in September. Persistent amateurs with medium-sized telescopes should be able to observe it from early July through late November.

nearly double the previous span of observations. Not only should the magnitude be estimated, but the tail watched for any changes.

If the comet arrives more than a couple of days off prediction, the following ephemeris will be wrong by several degrees. Then your best bet for positions will be the Sky & Telescope Hotline (617) 497-4168.

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
06-26	23h22.6m	+00° 24'	23h25.1m	+00° 40'	102°	M	12.9
07-01	23h30.5m	+02° 13'	23h33.0m	+02° 29'	104°	M	12.5
07-06	23h39.0m	+04° 17'	23h41.6m	+04° 34'	106°	M	12.1
07-11	23h48.4m	+06° 42'	23h51.0m	+06° 59'	108°	M	11.6
07-16	23h59.2m	+09° 34'	00h01.7m	+09° 51'	109°	M	11.1
07-21	00h11.8m	+13° 02'	01h14.4m	+13° 18'	109°	M	10.6
07-26	00h27.3m	+17° 17'	00h29.9m	+17° 34'	109°	M	10.0
07-31	00h47.3m	+22° 35'	00h49.9m	+22° 52'	107°	M	9.4
08-05	01h14.8m	+29° 12'	01h17.5m	+29° 28'	103°	M	8.7
08-10	01h55.0m	+37° 09'	01h58.0m	+37° 23'	96°	M	8.1

SPACE PROGRAM UPDATE BY: BOB FINGERHUT

VOYAGER IS CLOSING IN ON NEPTUNE

Voyager has begun its observatory Phase. It is currently taking the best photos of Neptune that has ever been seen. Clouds and features are easily seen in Neptune's atmosphere. Closest approach will be on August 25th.

MAGELLAN IS ON ACCURATE PATH TO VENUS

The shuttle and the IUS did their job well. Much less fuel was needed for Magellan's first mid-course correction than originally planned. The second correction may not even be needed. Three mid-course corrections were planned. The less attitude control fuel used enroute to Venus, the more data Magellan will be able to gather at Venus. Thruster life is expected to limit the length of the mission.

ENDEAVOR NAMED AS SHUTTLE REPLACEMENT

The new orbiter is named after the first ship commanded by Captain James Cook, who explored the Pacific and Alaskan waters in the late 1700's. The name was submitted by school children from Mississippi and Georgia.

SHUTTLE LAUNCH SCHEDULE REVISED

The next shuttle launch after Columbia will be Atlantis, carrying the Galileo spacecraft to Jupiter, in October. The Discovery will then launch a delayed Department of Defense mission. The final flight of the year, in mid-December, will be to retrieve the Long-Duration Exposure Facility if it is still there. The LDEF was launched in 1984 to provide one year exposure in the space environment to a variety of materials. Its retrieval was delayed by the Challenger accident. High solar activity has caused earth's atmosphere to expand out and increase drag on low earth orbiting satellites. LDEF may be spinning out of control or may re-enter (ala Skylab) before Columbia is launched to retrieve the satellite. The launch of the Hubble space telescope is now planned for April 1990.

GIOTTO CAN BE REVIVED FOR ANOTHER COMET ENCOUNTER

Tests have demonstrated that the European tracking stations and NASA's Deep Space Network can work together to command and communicate with the Giotto spacecraft that the Europeans sent to Halley's Comet in 1986. The Giotto spacecraft, currently in hibernation, will pass within 22 millions kilometers of earth in July 1990. Prior to that time, the craft will be revived and if found capable and financial approval is given, it will be maneuvered to make another cometary flyby. One candidate is comet Grigg-Skjellerup which could be encountered on July 10, 1992.

JUNE STARRY NIGHTS BY: RICHARD STANTON

METEORS - There are four meteor showers this month; one major and three minor. All of these showers will occur in the latter part of the month. The first will be the Capricornids on the 25th, radiating from 21-15. The following night, the 26th, the Theta Aquilids with a radiant point at 19-03. Both of these events are minor showers. On the 28th is the only major shower of the month, the South Delta Aquarids. This shower shows some 20 plus meteors per hour to a single observer. (Probably shows you less if you're married.) The radiant is at RA 22 DEC -16 and the moon will be near Last Quarter. Finally on the 30th will be another minor shower, the Alpha Capricornids at 19-16. These funny numbers are hours of Right Ascension and degrees of Declination in case you've been wondering.

METEOR SHOWER SUMMARY

25-JUL - CAPRICORNIDS	- MINOR
26-JUL - THETA AQUILIDS	- MINOR
29-JUL - SO. DELTA AQUARIDS	- MAJOR
30-JUL - ALPHA CAPRICORNIDS	- MINOR

PLANETARY OCCULTATION - If you have received your newsletter in time, don't forget that Saturn will occult the 5.8 magnitude 28 Sagittarii on the night of July 2nd at 22:30 hours Pacific Daylight time. The data of this event is well covered in both ASTRONOMY AND SKY & TELESCOPE in their June issues. If you don't read either of these magazines and need more information call any club officer. This is a tremendous astrophotographic and photometric opportunity so don't miss it.

LUNAR OCCULTATION - During the predawn hours of July 27 the sliver of the Last Quarter moon will slide through the Pleiades in Taurus. If you have never observed one of these events I highly recommend it. It is a beautiful sight to behold ... yes, even at the hours of 3 to 5 a.m.. The really good part is to get up at that hour and not be on K.P. duty. One of us must be getting old; maybe it's you.

:::CELESTIAL CALENDAR - JUL 1989:::

by Richard Stanton

LUNAR PHASES	Date	Rise	Transit	Set
NM 21:59hr	02-07	0520	1248	2021
FQ 14:19hr	10-07	1327	1854	0024
FM 10:42hr	18-07	1955	0022	0448
LQ 06:31hr	25-07	0016	0712	1414

NEARER PLANETS

Mercury.....	07-07	0454	1208	1927
1.33 A.U.	17-07	0516	1247	2022
Mag -1.1	27-07	0615	1332	2052
Venus.....	07-07	0728	1436	2148
1.545A.U.	17-07	0750	1445	2144
Mag -3.9	27-07	0814	1454	2138
Mars.....	07-07	0750	1449	2152
2.53 A.U.	17-07	0742	1435	2131
Mag +1.8	27-07	0734	1420	2110
Jupiter.....	07-07	0422	1135	1852
5.99 A.U.	17-07	0351	1105	1822
Mag -1.9	27-07	0320	1034	1752
Saturn.....	07-07	1951	0089	0528
9.07 A.U.	17-07	1909	2357	0445
Mag +0.1	27-07	1827	2315	0403

SOL	0704+2236	07-07	0546	1258	2014
0745+2114	17-07	0550	1257	2008	
0825+1916	27-07	0555	1256	2000	

ASTRONOMICAL TWILIGHT

JD 2,447,714.5	07-07	0409	-	2201
724.5	17-07	0418	-	2154
734.5	27-07	0428	-	2144

SIDEREAL TIME

Transit Right	07-07	0000	PDT= 1757
Ascension at	17-07	0000	PDT= 1837
Local Midnight	27-07	0000	PDT= 1916

TIMES & DATES ARE PACIFIC DAYLIGHT

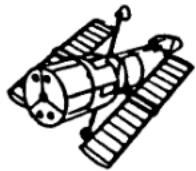
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MEMBERSHIP ONLY: \$10 MEMBERSHIP/S&T: \$26 JUNIOR (UNDER 18): \$18

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