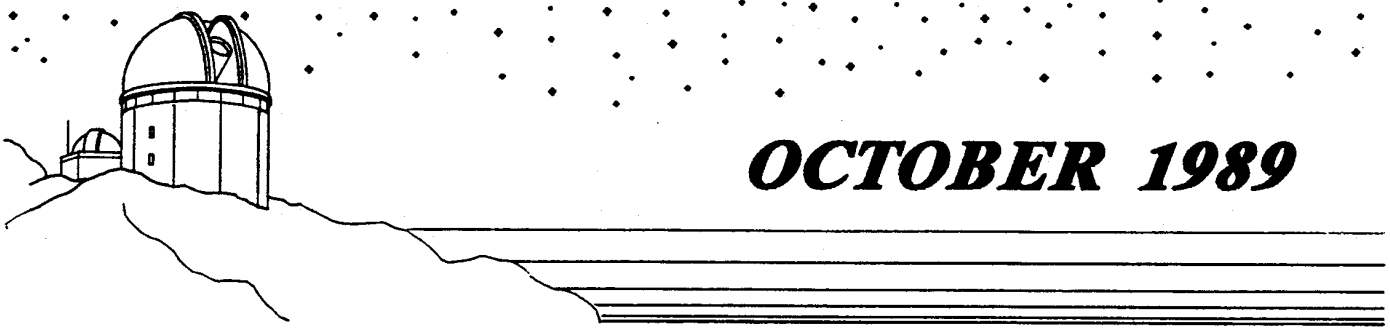
EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION.



OCTOBER 1989

****
* OCTOBER 14TH 8 PM *
* JOHN GLEASON *
* "NIGHT FISHING WITH PICASSO" *
****

OCTOBER 06 (FRIDAY) -- PUBLIC STAR PARTY AT BRANHAM LANE PARK. SUNSET, 6:43 PM; THE 41% MOON SETS 10:53 PM.

OCTOBER 07 NO ACTIVITY. PLEASE CONSIDER COMING TO BRANHAM LANE ON OCT. 6TH.

OCTOBER 14 GENERAL MEETING -- JOHN GLEASON PRESENTS: NIGHT FISHING WITH PICASSO. PUSHING THE CELESTRON SCHMIDT CAMERA TO ITS LIMITS WILL BE THIS EVENINGS SUBJECT.

OCTOBER 21 SJAA BOARD MEETING AT THE RED CROSS, 7 PM, FOLLOWED BY THE FINAL SESSION OF THE INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS AT 8 PM. THE CLASS WILL START AGAIN ON JANUARY 13, 1990.

OCTOBER 28 SJAA STAR PARTY AT FREMONT PEAK STATE PARK

NOVEMBER 3 PUBLIC STAR PARTY AT BRANHAM LANE PARK.

NOVEMBER 4 SJAA STAR PARTY AT GRANT RANCH COUNTY PARK. SUNSET, 6:06 PM; 35% MOON SET 10:49 PM. MORNING TWILIGHT 6:07 AM.

NOVEMBER 18-19 AANC ASTRONOMICAL CONFERENCE, A THE LAURENCE HALL OF SCIENCE, UC BERKELEY. MORE INFORMATION INSIDE.

NOVEMBER 18 GENERAL MEETING 8 PM. DR. JEFF CUZZI, HEAD OF THE VOYAGER IMAGING TEAM, WILL SPEAK ON VOYAGER DISCOVERIES DURING THE FLYBY OF NEPTUNE. (NOTE: THAT THE GENERAL MEETING IS MOVED FROM THE SECOND TO THIRD SATURDAY THIS MONTH ONLY.)

FIELD OF VIEW
BY: JOHN GLEASON & JIM VAN NULAND

NIGHT FISHING WITH PICASSO

Historically the Schmidt Camera has proven to be one of the most powerful research tools of modern astronomy. The famous 48-inch Palomar Schmidt Camera has figured prominently in more scientific discoveries than any other single instrument in existence.

For the past 3-years, John Gleason has been perfecting the operation of the Celestron 8-inch Schmidt camera. This smaller instrument performs in a similar manner as the giant research instruments with the photographic results just short of astounding. Join us this evening as John takes us on a celestial fishing trip through the Milky Way Galaxy with the Schmidt Camera.

PUBLIC STAR PARTIES - REMINDER!!!

To provide public education concerning astronomy, SJAA will conduct a series of free public observing sessions at Branham Lane Park in San Jose, from an hour before sunset to 11 pm. Dates (all Fridays) are:

October 6 November 3 December 8

Volunteers are needed! Call Jim Van Nuland or Tom Ahl if you will be able to bring an instrument. You may feel that you are not "expert" enough to present the sky to the public -- but consider that you know vastly more than those poor unfortunates who have NEVER looked through a telescope. You'll find it's a lot of fun, too, giving someone their first view of the Moon or Saturn!

If we can get enough volunteers, we'll form teams, so you would not have to attend each month. If all goes well, we hope to continue the series indefinitely.

M57'S CENTRAL STAR VIEWED FROM LOS GATOS RED CROSS!!!

The September 9 Autumn swap meet offered various telescope making and observing accessories and supplies, and a good time was held by all attendees. Several people were disappointed to learn that a certain superb Newtonian was not for sale; it'd been brought for the "Equipment" portion of the evening. Sorry, folks, if you've got to ask, you can't afford it.

There were some excellent slides shown! Jim Eiselt showed 300 shots of the recent lunar eclipse while Bob Fingerhut's efforts with the 5.5" Schmidt Camera are paying off. Dr. Ron Walton woke everyone up with his absolutely stunning Wright Schmidt camera photos. Nice Job Ron!

In addition, there were a few beginners who were willing to show us what they were doing, and the answer was "very promising"! Other beginning astrophotographers, please remember that Slide Night is not a competition! Bring in what you have, let the more experienced make suggestions, and let (us) non-photographers applaud your efforts!

Out in the parking lot Kevin Medlock demonstrated a new CCD type camera that was attached to his 70mm fluorite. In exposures of only a few seconds the ring nebula was a discernible "space donut" on the video monitor. Using the same camera on a 8-inch f/16 Tinsley Cass. we had the central 14.5 magnitude star within the ring. WOW!!!

DARKNESS SQUANDERING TIME

Set your watches back to the correct time during the Star Party on November 26 (at 2:00 am, set watch to 1:00 am). Re-observe the last series of objects?

ASTRONOMY AND TELESCOPE MAKING RENEWALS

The renewal period for Astronomy and Telescope Making magazines is upon us. Though Jim has not received the official notification, it appears that Astronomy will cost $14.50; Telescope Making, $8.50 for one year (12 or 4 issues, respectively). If you presently subscribe through SJAA, you may send a check, preferably including a mailing label, to Jim Van Nuland, 3509 Calico Ave., San Jose CA 95124. Make check payable to Jim Van Nuland (not SJAA). New subscriptions will begin with the January issue of Astronomy, and with the next issue of Telescope Making.

If you presently subscribe independently, you may convert to the group rate only if your subscription expires during 1990. Send a mailing label and enough $$$$ to cover the remaining part of 1990. Your subscription will be extended to synchronize it with the group renewal (calendar year).

Last year Jim made two dozen phone calls, and sent out numerous postcards, trying to contact everybody and later to solicit checks. Some took until March!! Jim is disinclined to that again. Jim's own subscription effectively cost him double. This year, Jim will renew only those whose checks are in hand on the cutoff date, probably November 1.

1989 ANNUAL AANC ASTRONOMICAL CONFERENCE

SJAA members will not want to miss the AANC conference to be held November 18 & 19, 9 am to 5 pm at Lawrence Hall of Science, University of California, Berkeley. This years conference promises to be a good one featuring the following speakers: Dr. David Morrison of NASA Ames Research Center will speak on "A deeper look at Neptune results". Jerry Sherlin, professional solar astronomer and former president of the Astronomical League will speak on "Amateur Solar Astronomy", George Keene, retired after 30 years with Eastman Kodak, the man who "wrote the book" on astrophotography, will speak on "The Differences between Photographic Emulsions and Electronic Cameras". There will also be presentations on a variety of subjects by amateur astronomers. Also...there will be presentations on a variety of subjects by amateur astronomers, information about astronomy clubs from all over Northern California, displays of high quality astronomical products for sale,

Astrophotography contest and exhibit (get your best shots ready), cosmic art exhibition, DOOR PRIZES!!!!!!!!!!!!!

If you wish to present a paper at this conference, send an abstract (indicate audio/visual needs) with you name, address, and phone # to the papers chairman, Don Stone (415) 376-3007 Sun-Thur, 7pm-10pm only or write to AANC Conference Committee, Chabot Science Center, 4917 Mountain Blvd., Oakland CA 94619 For more information on entering the astrophoto contest, contact Carter Roberts at the address above. Registration: $16 for 2 days (in advance until November 8) or $10/day at the door. SJAA members are encouraged to participate. How about the club setting up a group display about the SJAA? Mayby some of our astrophotographers can gather together a few photos for the contest?

COMET OKAZAKI-LEVY-RUDENKO

Last August brought the discovery of a comet that may get a bright as 4th magnitude later this fall. Kiyomi Okazaki photographed Comet 1989r on August 24th with a 10-inch Schmidt camera. Veteran comet hunter David Levey of Arizona swept it up visually with his 16-inch reflector the following night, and Michael Rudenko of Massachusetts did the same with a 6-inch refractor on August 26th. Comet Okazaki-Levey-Rudenko is a 10th-magnitude tailless glow in Bootes in this months evening sky, but after it rounds the Sun in November and becomes a morning object, it could brighten to 4th magnitude.

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.

20-INCH F/4.5 NEWTONIAN on machined aluminum German equatorial mounting. Optics made by Earl Watts, Surrier truss tube assembly. Many extras including: Meade 620 3-inch refractor finderscope, Telrad, secondary heater, quartz drive corrector, Lumicon off-axis guider, Sure Sharp focusing device, Meade computer aided telescope computer, and more! $11,000 or best offer. Contact: Dan Beck 408-439-6020 days, 408-338-3001 evenings. 10/89

MEADE 6-INCH F/6 reflecting telescope on equatorial mount w/ motor drive. $550 or best offer. David Richmond 408-378-3635 10/89

FOR SALE: CELESTRON 14 with wedge, tripod plus many C14 specific accessories: permanent pier plate, latitude adjust, heated dewcap, electric focus, f/5.6 to f/3.5 RFA, dual-axis drive corrector/slew, etc. No eyepieces. $6000 or best offer. 408-353-4781 10/89

FOR SALE: 10" Newt/Cass. f/5-f/20 with superb optics. 90mm f/15 refractor guide scope and 10x70 finder. Super solid Schaffer mounting with quartz digital drive corrector. $3800. Huge selection of accessories; eyepieces, filters, including Lumicon solar prominence filter, cases etc. Will sell accessories separately or with scope for $4500. Call for list and photo. Jim Baumgardt (415) 574-1500 days or (415) 692-5337. 9/89

FOR SALE: 4" f/30 professional solar prominence telescope. Missing Ha filter. Great for this active solar cycle. $150.00. Jim Baumgardt (415) 574-1500 days or (415) 692-5337. 9/89

MEADE, Model 320 refractor, 80mm, telescope with equatorial mount and tripod, several eyepieces and acc's. Like new. Call Dan, (408) 736-1827 $500 firm. 9/89

SUPER C8+ with starbright and 2" accessories including Orion 2" adapter, star diagonal, skyglow and ultra-block rear cell filters, Parks 2X Barlow, 55mm, 40mm, 32mm, 25mm, & 10mm 2" eyepieces, counterweights, dew shield, accessory tray, accessory case (large Orion), Celestron single axis drive corrector (12 VDC operation) declination motor w/hand control. All for $1200 firm. Call or write Mike Schartman at (408) 946-8395, 2262 Yosemite Dr. Milpitas, CA 95035.

FOR SALE: ASTRO-SCAN 2001 by Edmond Scientific, Celestron 2X Barlow, and 12.5 mm Orthoscopic eyepiece. All like new. $300. Contact Mrs. Burns. 408-984-1409 8/89

CELESTRON 8, with wedge, Meade tripod, 6x30mm finder, diagonal, filter set, Nikon photo adapter, 40mm Kellner, 25mm Kellner, 20mm Wide-Angle Kellner and 9mm Kellner 1 1/4" eyepieces. Hardly used. $995 or Best Offer. Chris Kralik, Home: (702) 851-2140 (Reno), Work: 415-877-5094. 8/89

TUTHILL Polar Axis finder/with instructions. $85. Bill Dillinges 415-792-9206

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. 7/89

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

EDMUND 4 1/4" Newtonian on German mount. 30 years old but in very good shape (mirror is dusty but coating is still good), 6 x 30 finderscope, one Ramsden and two Kellner eyepieces. Great beginners scope. $150 firm. (408) 926-8190

BAUSCH & LOMB REFRACTOR mounting. German equatorial mount with manual slow motion controls, setting circles, on wood tripod. Designed for 60-80mm refractor. $50.00 firm. (408) 926-8190 7/89

SPACE PROGRAM UPDATE
BY: BOB FINGERHUT

VOYAGER'S DISCOVERIES AT NEPTUNE MOUNT

On the night of August 24, Voyager II passed by Neptune at an altitude of 3044 miles and then returned magnificent high resolution photos as it passed the moon Triton. Among the data returned was the following: Neptune's rotation rate is 16 hr 3 min and its surface temperature (at its cloud tops) is -353 degrees F. Neptune has a magnetic field that is tilted 50 degrees from the axis of rotation. There are 700 mph retrograde winds in Neptune's atmosphere and wispy clouds rise 50 to 75 Km above the cloud deck. A great dark spot the size of Earth floats in Neptune's atmosphere. There is also a smaller dark spot at 54 degrees south latitude and a bright spot called "scooter". The ring arcs expected around Neptune turned out to be complete rings. Four are known to be continuous. At least 6 new moons were found, one even larger than the moon Nerid. The moon Triton, was found to be 1690 miles in diameter and to have a transparent atmosphere of nitrogen and methane.

GALILEO LAUNCH SCHEDULED FOR OCTOBER 12TH

The shuttle Atlantis was rolled out to the pad on August 29th. The Galileo Jupiter orbiter probe will be put in low Earth orbit by the shuttle. An IUS booster will then put the spacecraft on a trajectory to Venus where it will take a gravity assist. It will then return to Earth and take another gravity assist to put in on a trajectory toward Jupiter where it will arrive in 1995.

DELTA MAKES FIRST U.S. COMMERCIAL LAUNCH

McDonnell Douglas made the first launch of a satellite by a private U.S. company on August 27th. The Delta booster orbited a direct broadcast relay satellite called Marcopolo 1 for the British Satellite Broadcasting Ltd.

HIPPARCOS ASTRONOMY SATELLITE FAILS TO REACH ORBIT

The satellite was designed by the European Space Agency to provide precise positional measurements of about 120,000 stars with an accuracy of up to 0.002 arc sec. over 2.5 years. The satellite was put into a geostationary transfer orbit by Ariane booster on August 8th. The solid propellant apogee boost motor that was to circularize the orbit has failed to ignite in four attempts. In the current orbit the satellite is expected to be functional for 12-18 months.

COSMONAUTS REOCCUPY MIR

A two man crew was launched on September 6th to reoccupy and expand the Soviet MIR space station. The automatic docking system failed but the cosmonauts took over and docked manually. Two large modules are expected to be added in the next 4-5 months. The first, scheduled for October, will contain additional control moment gyros, a water electrolytic decomposition system for oxygen supply , an crew shower and a manned maneuvering unit. The second, scheduled for Jan. or Feb., has been equipped with a docking port capable of receiving the Soviet space shuttle orbiter.

SOVIET PLANETARY PLANS HAVE CHANGED

Plans for sending 2 spacecraft to Mars in 1994 have been simplified. Each spacecraft will now consist of an orbiter, one balloon to travel the surface of

Mars and several small surface stations. The part that was dropped was a large probe that could carry two balloons and a large fixed lander or a surface rover. Plans for a manned Mars mission around the year 2015 have been dropped.

COMET COMMENTS
BY: DON MACHHOLZ

A new bright comet has been discovered recently. It should be visible to us for the next few months, perhaps reaching naked-eye visibility in November. Meanwhile, Periodic comet Brorsen-Metcalf dims in our morning sky as it moves rapidly south. If you missed it this time, it will be back in 70 years.

Comet Okazaki-Levy-Rudenko (1989r): This comet was discovered on August 24 by Kiyomi Okizaki of Japan with a 10" Schmidt. David Levy of Tuscon, Arizona found it the next night with a 16" reflector. Michael Rudenko of Massachusetts found it Aug. 26 with a 6" refractor. It was then magnitude 10.5 and near the Corona Borealis-Bootes border in the evening sky.

The comet will be closest the sun (0.64 AU) on Nov. 11, but as seen from the Earth it remains at least 39 degrees from the Sun. The Northern Hemisphere will have an uninterrupted view of it as it passes north of the sun from the evening to the morning sky in late October.

Periodic Comet Brorsen-Metcalf (1989o)

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
09-26	11h00.9m	+06°14'	11h03.5m	+05°57'	18°	M	7.5
10-01	11h20.5m	+02°16'	11h23.1m	+02°00'	17°	M	8.1
10-06	11h38.5m	-01°18'	11h41.0m	-01°35'	17°	M	8.7
10-11	11h55.0m	-04°31'	11h57.6m	-04°48'	17°	M	9.3
10-16	12h10.4m	-07°25'	12h13.0m	-07°42'	18°	M	9.9
10-21	12h24.7m	-10°03'	12h27.3m	-10°19'	19°	M	10.3
10-26	12h38.0m	-12°26'	12h40.7m	-12°42'	20°	M	10.8
10-31	12h50.6m	-14°36'	12h53.2m	-14°53'	21°	M	11.2
11-05	13h02.4m	-16°36'	13h05.1m	-16°52'	23°	M	11.6

Comet Okazaki-Levy-Rudenko (1989r)

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
09-26	14h45.3m	+31°14'	14h47.4m	+31°02'	49°	E	8.5
10-01	14h40.2m	+30°48'	14h42.4m	+30°35'	46°	E	8.1
10-06	14h35.0m	+30°20'	14h37.2m	+30°07'	44°	E	7.7
10-11	14h29.5m	+29°49'	14h31.7m	+29°36'	42°	E	7.3
10-16	14h23.4m	+29°11'	14h25.6m	+28°58'	41°	E	6.9
10-21	14h16.5m	+28°21'	14h18.7m	+28°07'	40°	E	6.4
10-26	14h08.5m	+27°07'	14h10.8m	+26°53'	39°	E	6.0
10-31	13h59.2m	+25°15'	14h01.5m	+25°01'	39°	M	5.5
11-05	13h48.7m	+22°23'	13h51.1m	+22°08'	40°	M	5.1
11-10	13h37.2m	+17°57'	13h39.6m	+17°41'	40°	M	4.7

Do some comets brighten rapidly before discovery? During recent decades several studies have been done on that question, and the consensus is that 10 to 30 percent of comets found visually suffered a brightness outburst shortly before they were found.

Why does this matter to the comet hunter? If comets behave properly, then an orderly, systematic comet hunting program should suffice to find comets. If comets explode into visibility at any time, then the sky must be swept more often, with all parts being suspect to containing new comets.

How can we tell if a comet has brightened rapidly if it is not yet under observation? First, pre-discovery photos are sometimes found of comets. They show us how bright it was before being discovered visually. Secondly, we sometimes find a periodic comet in a stable orbit that has never been observed, even though its in a stable orbit that has never been observed, even though its been by every few years. It is a candidate for rapid brightening. Finally we look at circumstantial evidence: sometimes an area has been swept often and nothing is found, then suddenly a bright, slow-moving comet is discovered

there. We make the assumption that if the comet was behaving normally it would have been found sooner.

Here, in chronological order, are six of the comets discovered visually from 1975 through 1988 that I believe outburst or brightened rapidly before discovery. I could probably make a case of another half-dozen comets, but these stand out as having the greatest evidence of outbursting.

Periodic Comet Boethin (1975a): This comet has an 11-year orbital period and wasn't picked up until 1975. In 1985-6 it displayed magnitude fluctuations.

Periodic Comet Haneda-Campos (1978j): Another short-period (6 yr) comet that wasn't found until 1978, when it displayed unusual magnitude changes. It was missed in 1984.

Periodic Comet Denning-Fujikawa (19878n): This was missed for 11 orbits between 1881 and 1978, so we know its brightness varied. Also, despite extensive searches in 1987, it failed to show again.

Comet Panther (1980u): Strong photographic evidence shows at least a mild outburst in the weeks before discovery. Another clue is that it was missed for several months in the evening sky.

Periodic Comet Takamizawa (1984j): Prediscovery photos show that this 7.3-year comet, not found until 1984, flared one to four weeks before discovery. It was also missed by comet hunters during that time, when it was well-placed and should have been bright-I swept over it nine times in four months.

Comet Machholz (1985e): Easily placed and discoverable for two full weeks before discovery, but not found. Also, it broke apart upon perihelion, again showing instability.

How rapidly do comets brighten near the time of discovery? This question is of some importance to the comet hunter, for if comets brighten slowly, then a specific area needs to be swept only occasionally. A comet beyond the magnitude (brightness) threshold of the observer may well stay beyond reach for several weeks.

If on the other hand, comets brighten very rapidly, then a "bare" area of sky tonight may contain a discoverable comet tomorrow; the comet hunter may find it worth while to sweep and re-sweep an area several times a month.

A study of the 45 comets found visually by amateurs from 1975 through 1988 indicates a large difference between those found in the morning sky and those found in the evening sky. The 27 morning sky comets averaged a brightening of 0.50 magnitude every ten days, while those in the evening sky averaged a brightening of only 0.08 magnitude in ten days. These figures assume the comets behaved before discovery much as they did after discovery.

The following two graphs show the number of comet from each group which brighten or dim a certain amount during the ten days centered on discovery. Those in the morning sky show greater variance than those in the evening sky.

MORNING DISCOVERIES

```
5<<X at -3.4                                5
4           X                               4
3           X           X                   3
2           X     X     X X                 2
1 X         X  XXXX XXX  XXXXXXX XX  X     1
0+----+----+----+----+----+----+----+----+-0
-2.5 -2.0 -1.5 -1.0 -0.5  0   0.5  1.0
    (BRIGHTER)  MAG/10 DAYS  (DIMMER)
```

EVENING DISCOVERIES

```
4                                           4
3                       X X                 3
2                    X XX X X         X     2
1                  X  XXXX XXX        X X   1
0+----+----+----+----+----+----+----+----+-0
-2.5 -2.0 -1.5 -1.0 -0.5  0   0.5  1.0
    (BRIGHTER)  MAG/10 DAYS  (DIMMER)
```

Those comets brightening rapidly in the morning sky are generally approaching both the earth and the sun both factors tend to "brighten" the comet. Some comets in the morning sky are pulling away from the Earth, or from the Sun, and those appear in the moderate areas in our graph. A few comets are pulling away from both the Earth and Sun while in the morning sky, these score as strong "+'s" on the graph.

As for the evening sky, comets are nearly always receding from the Earth causing one component for dimming; if they are slowly approaching the Sun this will result with an overall moderate brightening..

Since a comet brightens an average of 1.5 magnitudes per month in the morning sky, and only 0.2 magnitude per month in the evening sky, it makes some sense to sweep the morning sky more frequently.

GREAT RED SPOT
BY: JIM VAN NULAND

At Calico Observatory, Jupiter season began on August 13 with the recovery of the Great Red Spot. A confirming observation on Sept 1 verified earlier reports of considerable change on Jupiter.

Jupiter was always willing to show its equatorial belts, even under very poor conditions; now, however, the South Equatorial Belt has vanished! At moments of very best seeing at Fremont Peak, I suspected thin threadlike lines where the SEB would have been. The Spot was well above (south of) the lines, nearer the pole than I recall seeing it before. Sporting a pale orange, the Spot seems to be nearly the size and shape that it has been for the last several years (it was redder and larger in the early '70s). The South Temperate zone is nicely white, so the Spot shows well against it during moments of best seeing. There is little or no dark material surrounding the Spot.

In view of such changes, it is surprising that the Spot's longitude was entirely compatible with earlier observations, across the 166 days since I'd last seen it. My recovery time was only 6 minutes earlier than predicted.

Although the Great Red Spot had been seen by the mid-1600s, it was given little regular attention, as it probably faded. It first gained general attention in 1978, and has been followed for most of the 20th century. Other red and white spots appear for a few months at a time, but only the Great Spot remains. Its motion in both longitude and latitude is erratic, making 3-year predictions impossible, which is why you don't see an ephemeris for it in the astronomical almanacs. I continue tracking during Jupiter season, adjusting the Spot equation as needed to follow the changing motion of the Spot.

The predictions are corrected for the changing aspect, phase, and light time. At the given times, the Spot will be facing nearest the Earth, and thus will appear on the central meridian of the apparent disk of the planet, about halfway from the equator toward the south pole. Observations may be made for about an hour before and after that time. The times are given in local time, and include transits for which the planet is at least 1 hour up, with the Sun at least 3 degrees down. A random amount from 0 to 10 minutes has been subtracted, to prevent anticipation when timing a transit. It is useful to know that the Spot moves its own length in about 30-40 minutes.

Good seeing and a power of about 200-300 are needed. Begin half an hour before the given time. Use an apodizing screen if you have one; you might also experiment with colored filters, perhaps yellow, blue or green. A neutral density filter has also been suggested; like the apodizing screen, the filter helps control glare and seems to stabilize the image somewhat.

Focus carefully, then scan the southeast quarter of Jupiter. Watch continuously for those moments when the air is especially stable, and the Spot will show itself in all its glory. Let me know of your results, especially if you are using an instrument smaller than 8 inches, or if you do some experimentation with observing aids.

Great Red Spot on Meridian PDT

da	mo	d	h	m		da	mo	d	h	m		da	mo	d	h	m	
Su	10	1	1	2	am	W	10	18	0	8	am	W	11	1	1	37	am
M	10	2	6	48	am	Th	10	19	5	51	am	Th	11	2	7	31	am
Tu	10	3	2	40	am	F	10	20	1	43	am	F	11	3	3	19	am
Th	10	5	4	24	am	Su	10	22	3	26	am	F	11	3	11	7	pm
Sa	10	7	5	57	am	Tu	10	24	5	5	am	Su	11	5	5	0	am
Su	10	8	1	45	am	W	10	25	0	53	am	M	11	6	0	52	am
Tu	10	10	3	27	am	Th	10	26	6	36	am	Tu	11	7	6	31	am
Th	10	12	5	4	am	F	10	27	2	28	am	W	11	8	2	22	am
F	10	13	1	2	am	Su	10	29	4	8	am	W	11	8	10	14	pm
Sa	10	14	6	42	am	M	10	30	0	3	am	F	11	10	4	3	am
Su	10	15	2	40	am	Tu	10	31	5	48	am	F	11	10	11	58	pm
Tu	10	17	4	19	am												

DOUBLE, TRIPLE, AND MULTIPLE STARS
BY: PATRICK M. DONNELLY

One of my favorite constellations is Delphinus, the dolphin. It is a small constellation high in the evening sky of October and well placed for double star observing. It is easy to get around in Delphinus, since it is small with most of the constellation fitting inside of the finder scope's field of view.

One should begin in Delphinus at Gamma Delphini. Gamma is an almost equal (mag 4.5 & 5) pair of stars separated by 10". Gamma's colors appear yellow and green to me. In the same low power field with Gamma is Sigma 2725 consisting of a mag 7.5 & 8 pair separated by about 6'. The low power view of both is very colorful. Both Gamma and Sigma 2725 are true double stars and at approximately the same distance of 100 light years. Unfortunately, they are not physically bound. After Gamma check out Alpha-Delphini. This star consists of a mag. 4.0-12.0 pair separated by 43". I've seen this pair in my backyard easily, so I suspect that mag 12 estimate is about 2 mag. too low. If you own a big telescope, try Beta Delphini. Beta is a pair of mag. 4 & 5 stars separated now by a very small distance of around 0.4". Beta also has 2 dim companions of mag. 11 and 13 separated by 42" and 19" respectively. I've seen these companions with the 30-inch telescope at Fremont Peak.

Following these relatively bright members, find Kappa Delphini. Kappa is the next bright star southeast of Epsilon-Delphini. Kappa is an apparent triple but only the two bright components are true companions. The primary member is a mag. 4.5 star and the other components are mag. 11 and 9.5 separated by 29" and 214". I could see all 3 components from my backyard, although the mag. 11 component was something of a challenge.

After you've finished these easy doubles, here are some dimmer doubles to observe. ON the west end of Delphinus are Sigma 2673 & 2674. This is the Delphinus version of a double-double. 2673 consists of mag. 8 and 9.5 components separated by 2.5", and 2674 consists of mag. 8 and 10.5 components separated by 15.6". Both doubles are separated from each other by only 76". Its a fine sight, if you find them. Burnham puts them at 20hrs 20.4 min & 13 deg 11 min north. In the northwest corner of the constellation is another fine triple Sigma 2679. 2679 consists of a mag. 7.5 primary, a mag. 8.5 secondary at 23", and a mag.. 12 secondary at 39". The group forms a nice isosceles triangle, and it appears that the mag. 12 companion is really about mag. 10.5. Just above 2679 is a small planetary nebula NGC 6905. While searching for 2679 I found it. It is listed as mag. 12, but it is easily visible from Morgan Hill. I guess the true magnitude is around 8. About equidistant from 2679 and NGC 6905 a the same declination as 2679 is an unknown quadruple star not listed in any of my books. It consists of a mag. 8 and 9 primaries separated by 20" with near by mag. 10 and 11 companions about 5" from mag. 9 and 18" from the mag. 8, respectively. I found this star because it is very similar to 2679 under low power.

Finally, consider checking out Beta 987 at 20hrs 28.0 min +19deg 15 min. B987 is a quadruple star consisting of a mag. 7 primary and companions of mag. 7.5, 11, and 11.5 separated by 106", 22", and 2.4". The close companion at 2.4" is very difficult to see. What is truly amazing about this star is that in medium power eyepieces there are two other triples in the same field of view. All are about mag. 9 with mag. 10 and 11 companions at very comfortable separations of 25" to 40". When you find B987, check out these other triples, too. I could not find any reference to them in any of my documents. Beyond these stars I might suggest H0131, Sigma 2690, Sigma 2703, O Sigma 409 & BZ88 as other multiple stars to view. Data on these can be found in Burnham's Celestial Handbook.

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 for 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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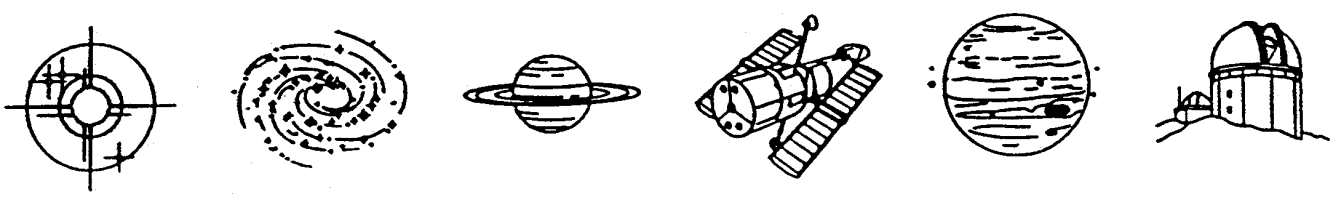

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