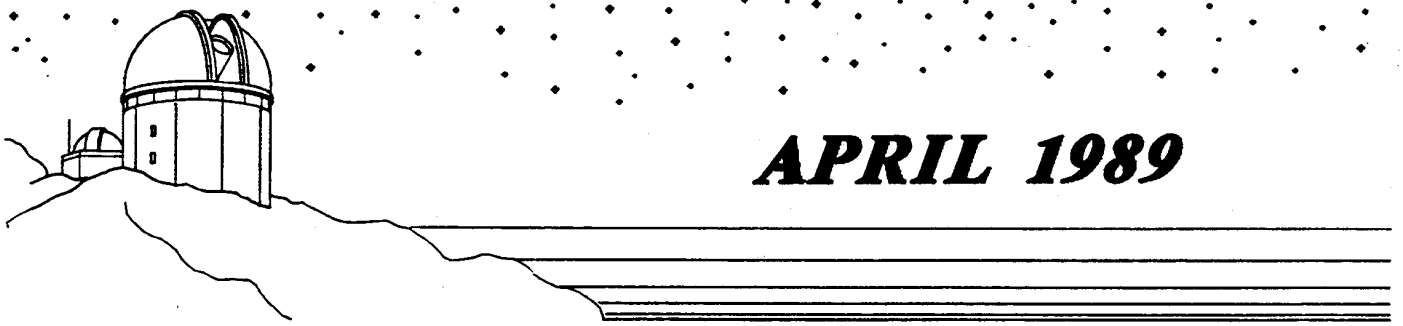
EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION.



APRIL 1989

APRIL 8TH 8 PM
JOHN BRIGGS
A MOUNTAIN OBSERVATORY IN VENEZUELA

APRIL 1 STAR PARTY AT FREMONT PEAK STATE PARK. SUNSET 6:28 PM; ASTRONIMICAL TWILIGHT, 7:57 PM. MORNING TWILIGHT, 5:23 AM; SUNRISE, 6:52 AM. THE 19% MOON RISES 4:49 AM, SHORTLY BEFORE TWILIGHT. DARKNESS SQUANDERING TIME BEGINS 2:00 AM SUNDAY. THESE TIMES ALLOW FOR THAT; ADVANCE YOUR WATCHES WHEN ARCTURUS CROSSES THE MERIDIAN.

APRIL 8 GENERAL MEETING AT THE RED CROSS BUILDING; JOHN BRIGGS

APRIL 15 PAY YOUR TAXES DUE AND COME TO THE SJAA BOARD MEETING AT THE RED CROSS, 6:30. THEN AT 8:00 PM, THE INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS. MEMBERS ARE WELCOME AT THE BOARD MEETING, TO PARTICIPATE IN THE RUNNING OF THE SJAA.

APRIL 22 NINTH ANNUAL BAY-AREA ASTRONOMICAL FLEA MARKET AND AUCTION, 2:00 PM TO 11 PM. MORE DETAILS AND PRE-REGISTRATION INFORMATION INSIDE.

APRIL 29 STAR PARTY AT GRANT RANCH COUNTY PARK. SUNSET, 7:56 PM; ASTRONOMICAL TWILIGHT, 9:33 PM. MORNING TWILIGHT, 4:38 AM; SUNRISE, 6:15 AM. THE 30% MOON RISES 3:20 AM, BEFORE TWILIGHT.

MAY 6 STAR PARTY AT HENRY COE STATE PARK. DUSK TILL DAWN. 3% MOON SETS AT 10 PM. ALTERNATE: GRANT RANCH COUNTY PARK, PUBLIC OBSERVING SESSION CONDUCTED BY THE HALLS VALLEY ASTRONOMICAL GROUP. THERE IS ALSO A FREMONT PEAK OBSERVATORY OPEN HOUSE THIS EVENING FOR THOSE WISHING TO DRIVE DOWN TO FREMONT PEAK.

MAY 13 GENERAL MEETING AT THE RED CROSS BUILDING. OUR OWN BOB FINGERHUT WILL REPORT ON HIS NEW ZEALAND ASTROPHOTOGRAPHY TOUR. THIS IS ALSO NATIONAL ASTRONOMY DAY. SOME LAST-MINUTE PLANS MAY BE ANNOUNCED IN THE MAY BULLETIN.

MAY 20 SJAA BOARD MEETING AT THE RED CROSS, 6:30 PM. INTRODUCTORY OBSERVATIONAL ASTRONOMY CLASS AT 8:00 PM.

MAY 27 NO SJAA ACTIVITY. THE RIVERSIDE TELESCOPE-MAKER'S CONFERENCE RUNS MAY 26 THROUGH MAY 29. 60% MOON RISES ABOUT 1:30 AM.

FIELD OF VIEW

BY: JOHN GLEASON and JIM VAN NULAND

ANNUAL AUCTION AND SWAP MEET

The 9th Annual SJAA/Bay Area Astronomical Auction and Swap Meet will be held on April 22. The Swap Meet will operate much as it did last year; the informal nature allowed many people to participate who were not able to stay through the Auction. There were some questions that came up, so I'll try to answer them.

Registrations is not needed for the Swap meet, neither people or merchandise. If an item has been registered in the Auction, it may be sold at the Swap Meet anyway. Buyers should keep this in mind.

The doors will open at 1:00 PM. However, please do not buy or sell before the official starting time, 2:00 PM. This is intended to give all buyers a fair chance at everything. The meet will run most smoothly when everyone has confidence that it is being conducted fairly. If somebody pushes to buy early, just say no and blame me (JVN).

Sellers must keep track of their sales, and settle the 10% commission before leaving. Exceptions must be cleared with the treasurer. You may settle through the computer after the auction. In the latter case, the commission will be taken against other sales, or added to other purchases.

Silent bids may be taken on any items, and the seller may close bidding and accept a bid at any time.

Unsold items: if you sell an item after the auction, but while still on the grounds, that is an official sale, and the 10% commission is due. In such a case, if neither person has settled up, the sale may be run through the computer if the item was registered.

If you are bringing in (auction) material for another person, or buying for another, you may ask for a separate bidder number for those items. This will give you a separate printed bill of purchases/sales. (No, you needn't stand in line twice!)

Last: Please, if you might wish to auction an item, please pre-register it! It's much easier to withdraw an item than to register it late!

MEMBERSHIP CARD CONTEST

The Membership Card contest has been concluded. The new series of cards should be ready for the 1989-90 renewals. Thank you to all who submitted entries, and congratulations to Jack Zeiders, our winner. Jack is also overseeing preparation of the new cards.

1989 MESSIER MARATHON IN APRIL

A Full Moon on March 22 hinders our Messier Marathon this year. Good weekends are March 11/12 and April 1/2. Since our General Meeting is March 11, we'll be holding the Marathon April 1/2. Some members of our club will be at Fremont Peak that night. If there is clear weather, Don Machholz will be at Henry Coe Park, at the overflow parking lot one-half mile before the gate. Don invites members to join him.

Because of the locations of the galaxies, clusters and nebulae in Charles Messier's Catalog, mid-march through early April is the best time to hold the dusk-to-dawn observing session. Between March 5 and 20, 109 of the 110 objects can be seen, with only M 30 missing. From our latitude, we lose M 74 around March 21, meaning we'll see 108 objects until March 30. On March 31 we can pick up M 30 in the morning sky,this gives us 109 objects again. After April 3 we lose several objects in the evening sky, decreasing the count. Observers in the southern United States may be able to observe all 110 of the Messier Objects, from our latitude the limit seems to be 109. Other factors include the moon phase, which can't be too bright, and picking a weekend, since we're usually awake all night long.

The SJAA began the Marathon in March 1979, and we've been holding it every year since then. In some years the moon has given us trouble, while sometimes the weather fails us. Many other active clubs across the nation also "Marathon".

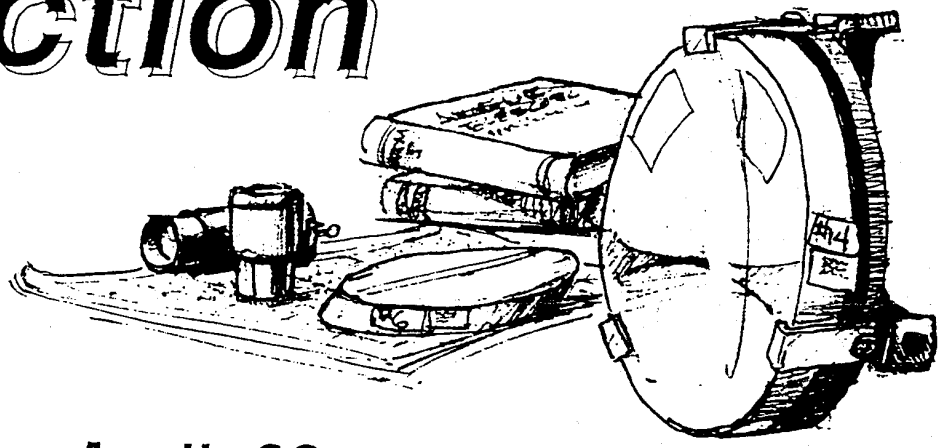
Contact Don Machholz (408-448-7077), for observing order sheets which can be used with almost any star chart. After the Marathon, please let Don know how it went.

YOSEMITE STAR PARTY

We have drawn June 30 - July 1 for the annual Yosemite Star Party. Registration will be announced in the May bulletin, with some system to try being fair to all. Each night will provide 5 hours of darkness. No moon. Glacier Point at Yosemite Park is one of the outstanding observing sites, and all who have observed look forward to going again. As before, there is a limit of only 30 attendees. Watch for your May bulletin.

The 9th ANNUAL

Bay Area Astronomical Auction



Will be:

Saturday April 22nd

at the Los Gatos Red Cross bldg.

16011 Los Gatos-Saratoga Rd.

Doors will open at 1:00 PM

Swap-Meet 2:00 - 5:00 PM

Auction 6:00 pm -10:00 PM

Presented by the San Jose Astronomical Association

The 9th annual Bay Area Astronomical Auction is approaching, so now is the time to start looking around for those items not earning their space, or brought back from Riverside, or whatever is astronomical or telescope-making related that you would like turn into cash.

Pre-registration makes it easy. Just fill in the form below or a copy of it. List each different item you have. If there are several of one item, use a single line and show the quantity. Enter a minimum bid, even if you wish to let it go really cheap. Indicate whether the item is an outright donation; if not, a minimum commission of 10% of the selling price is requested. The SJAA share of all sales is tax deductable, and goes to further public education in astronomy.

Next, and most important, MAIL the completed form with a SASE to Jim Van Nuland at 3509 Calico Ave., San Jose, Ca. 95124. You may wish to keep a copy for your files. Jim will assign a bidder/seller and item numbers, and return the form to you promptly. If you omit a SASE Jim will assign numbers but hold the form for your pickup at the auction. Please arrive early in this case as there is always a last minute pile-up, if you are too late your items may not be entered into the auction.

You will now have the numbers to label each item before the day of the auction. Use self adhesive labels and please indicate the minimum bid and item number on each item.

To accommodate the increasing volume of "good stuff" we will have a Flea Market or Swap-Meet in the afternoon from 2:00 to 5:00 pm. The auction will run from 6:00 pm until we finish. No registration is required for participation in the Flea Market.

Items having a realistic minimum bid of about $5 probably should be swap-meet material, as auction time is limited. Items of limited or highly specialized application, even if valued above the $5, should be considered for the swap-meet.

A silent auction will run concurrently with the main auction. This is primarily for big ticket items such as complete telescopes. A sheet with the minimum bid is attached to the item, you can write in a new higher bid and line out the old. Silent auction results will be made final at the break and the winning bids announced.

DIRECTIONS TO THE AUCTION

Take HWY 17 (880) toward Los Gatos. Take the Los Gatos- Saratoga Rd (HWY 9) exit and continue West about 6/10 Mi. Turn right on Rose Ave. then another immediate right into the parking lot. The address is 16011 Los Gatos-Saratoga Rd.

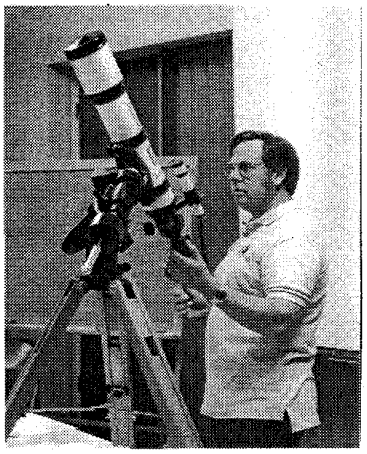
Doors open at 1:00 pm. a $1:00 donation is requested for registration to buy or sell. Refereshments will be available. It is always a lot of fun.

1989 Bay Area Astronomical Auction Pre-registration

Bidder # from SJAA	Name:			City:
	Addr			Zip:
Item # from SJAA	Qty:	Min Bid	Donation 10% min	Description (40-50 Characters)

NOTE: This form will be returned to you with the shaded areas filled in by the SJAA

ASTRO-CLASS TO FEATURE TELESCOPES



Jack Peterson demonstrates
the use of coordinate systems.

This month's Introductory Astronomy class will feature a discussion of telescope types and their optimum uses. The will be presented by Tom Ahl. Jack Zeiders and Tom are looking for volunteers to bring in a variety of telescope types. If you have something really unusual that you would like to have shared with the class then give Tom Ahl a call. Jack Zeiders is also looking for color astrophotography (slides) of various astronomical objects to use in his constellation talks. If you hyper Konica 3200 you can make 1 - 3 minute exposures that will yield a perfect visual representation of what you might see through your telescope.

OPEN HOUSE AT FREMONT PEAK OBSERVATORY

On Saturday, May 6, the Fremont Peak Observatory Association (FPOA) will be conducting a open house for all Bay Area amateur astronomers. The 30" telescope mirror is freshly coated, and there have been number of enhancements to the observatory to make observing more comfortable. Please see enclosed information sheet about the event.

APRIL STARRY NIGHTS
BY; RICHARD STANTON

METEORS - April brings us two relatively well known meteor showers as well as two others that are not so well known. The first is the Sigma Leonids that run from March 21st until May 13th. This is a minor shower that will peak on April 17th. Look for its radiant around 13-05. Next will come the Lyrids, a major shower, reaching maximum on the 22nd. The Lyrids typically show around 15 meteors per hour but in 1982 the count ran as high as 80 per hour. The radiant hovers around 18+33. The last two for the month are the Mu Virginids with maximum on the 25th and the Alpha Bootids at maximum on the 28th. These are both minor showers. The radiants are 14-5 and 14+19 respectively.

GALILEAN SATELLITES - April is again a very sparse month for Galilean events on the prime Saturday nights. In fact by the time you get this issue may already of missed it. Regardless, there are many events throughout the month that you can observe. Jupiter season is almost over so get to it.

```
04-01  SAT 19:38 PDT Io Transit Ingress
           20:41     Io Shadow Ingress
           21:50     Io Transit Egress
           22:50     Io Shadow Egress (below horiz)
```

MINOR PLANETS - If you are out observing on some of our April temperate nights try to track down a few asteroids. Those that I have listed below are all within reach of even the smallest scopes. They will look just like a faint star and you cannot detect motion in one observation. Look at the field several hours later or the next evening. The "star" that has changed position in the field is the asteroid.

:::CELESTIAL CALENDAR - APR 1989::::
by Richard Stanton

LUNAR PHASES	Date	Rise	Tran	Set
New Moon	05-04	0619	1237	1858
First Quarter	12-04	1114	1843	0213
Full Moon	20-04	1921	0041	0600
Last Quarter	27-04	0138	0623	1105

NEARER PLANETS				
Mercury.....	07-04	0702	1319	1941
1.19 A.U.	17-04	0658	1358	2103
Mag -0.2	27-04	0702	1430	2202
Venus.....	07-04	0656	1308	1924
1.72 A.U.	17-04	0651	1318	1950
Mag -3.9	27-04	0645	1328	2015
Mars.....	07-04	0944	1703	0025
1.97 A.U.	17-04	0928	1649	0012
Mag +1.5	27-04	0912	1634	2359
Jupiter.....	07-04	0908	1613	2321
5.82 A.U.	17-04	0836	1542	2251
Mag -2.0	27-04	0803	1511	2221
Saturn.....	07-04	0201	0652	1141
9.78 A.U.	17-04	0122	0613	1102
Mag +0.4	27-04	0043	0534	1023

						SOL	
(3) JUNO -	04 APR	R.A. 09:44	Dec. +10:38	Mag. +9.5		0103+0644	07-04 0646 1306 1930
	14 APR	09:45	+11:24			0140+1023	17-04 0634 1306 1941
	24 APR	09:49	+11:52			0217+1345	27-04 0623 1305 1951
(4) VESTA-	04 APR	R.A. 18:18	Dec. -18:09	Mag. +7.0		**ASTRONOMICAL TWILIGHT**	
	14 APR	18:29	-18:08			JD 2,447,623.5	07-04 0507 - 2056
	24 APR	18:36	-18:09			633.5	17-04 0452 - 2107
						643.5	27-03 0437 - 2118
(29) AMPHITRITE							
	04 APR	R.A. 14:57	Dec. -22:58	Mag +9.8		**SIDEREAL TIME**	
	14 APR	14:49	-22:57			Transit Right	07-04 0000 PDT= 1154
	24 APR	14:40	-22:44			Ascension at	17-04 0000 PDT= 1234
						Local Midnight	27-04 0000 PDT= 1313

DEEP SKY CHALLENGE - This month we'll do a little scouting in Monoceros. For many of us the "challenge" may be just finding Monoceros. When you do, look for the "Eagle Nebula." This is a Emission/reflection Nebula that they say requires at least 20 cm aperture to see. This object is cataloged as IC 2177 and NGC 2327. Don't bother looking it up in Burnhams...it's not there. It's a good sized object at 120" X 40" but is Very Faint with slightly brighter irregular patches near the center. Look for it at R.A. 07:05, Dec. -10:42.

ENCYCLOPEDIA GALACTICA - A great deal of time among amateur astronomers is spent talking about how "dark" one site is compared to another. It's almost always a circuitous conversation due to the absence of a standard. In DEEP SKY #24, Gregg Thompson published his "Observing Site Darkness Scale" which many of us may find useful as a reference standard.

01 - There is a total absence of moonlight and artificial light in the sky. Stars fainter than 6th magnitude are visible by naked eye. (Sounds like typical New Zealand nights! - ed.)

02 - Very slight brightening of the sky (like that caused by Zodiacal light).

03 - 3-day old moon or slight light pollution, but 6th magnitude stars are visible at the Zenith.

04 - Faintest portions of the Milky Way are barely visible.

05 - Zenith appears fairly dark but sky is fairly bright around the horizon. Milky Way is still substantially visible.

06 - Only the brightest portions of the Milky Way are visible. Horizons are noticeably bright.

07 - General illumination of the entire sky equal to 7-day old moon. Faintest stars visible are magnitude 5.

08 - Sky is bright, similar to a three quarter moon.

09 - Sky is very bright; faintest stars visible are magnitude 4.

10 - Illumination equivalent to or greater than full moon.

As an example of the usefulness of this scale I could tell you that my home observing station is "pretty dark." It tells you a lot more if I say that my station is between 02 and 03 on the above scale.

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.

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

MEADE QUARTZ MOTOR DRIVE SYSTEM for GEM, 6600, and 8800 reflectors and model 320 refractor. $100. Dennis Mueller (408) 447-0690. 4/89

FOR SALE: Mint condition Celestron Super C8 plus with Starbrite. Optical tube made in late '88, illuminated 8 x 50 right angle finder, camera bracket, dew zapper, Jim's Mobile Motofocus, multicoated right angle prism, Byers drive,

Meade Tripod, new style Samnsonite type carrying case. $1,190. Edward Hillyer, P.O. Box 6065, Salinas, CA. 93912. (408) 424-0460 3/89

8-INCH f/12 3-ELEMENT APOCHROMATIC REFRACTOR! A once in a lifetime opportunity to own a true "observatory quality" telescope. Complete with massive Astro Works German equatorial mounting and pier. Optical performance is superb. This is the same telescope that thrilled hundreds of observers during the Fremont Peak Observatory Assn's. Mars watch program. $12,000. For additional information Contact: Kevin Medlock (415) 654-6796 or (415) 784-0391 3/89

SKY SENSOR COMPUTER CONTROL for Super Polaris mount - works perfectly. Includes instructions, charts, and is in original box. $175. Celestron photographic LPR filter (fits T-threads, off-axis guider). New condition, $35. Contact: Jim Molinari (408) 298-7557 (W), (408) 255-7030 (H) 3/89

WANTED: Used Astroscan. Call Don or Laura (408) 448-7077 3/89

MOVING SALE: Back issues of Sky and Telescope, Mercury, and Scientific American. For S&T: April 1971, April-July 1973, July-June 1974, Nov.-Dec. 1975, All of 1976 (except Nov. and Dec.), Jan. 1977, Jan.-June 1979, April-Dec. 1980, All copies 1981-1987. For Mercury: All copies from 1979-1988, excepting Jan/Feb 1979, Sept/Oct and Nov/Dec 1983, and the first 3 of the 4 1984 issues. For Scientific American: June, July 1968, Aug.-Dec. 1979, all of 1980-1987 with these exceptions - Sept. '83, March '84, Aug. '86. Offers sought on all or part. I may be able to deliver locally. Contact: Dave Goodwin, (408) 247-9163. 3/89

CELESTRON POWERSTAR FORK MOUNTINGS. I have two (2) Powerstar fork mounts for Celestron 8, complete with dual-axis drive correctors and AA battery packs. These units are ideal for C8 owners wishing to upgrade from a Super Polaris mounting or simply want to upgrade to a DC stepper motor drive base for convenience and portability. Best Offer. Also, Celestron C8 wedge with deluxe latitude adjuster. $25. Contact: John Gleason (415) 792-8248 3/89

CELESTRON SUPER POLARIS MOUNT with single axis stepper motor drive corrector, tripod, accessory tray, and Polaris finder with illuminator. Ideal for small refractors, or can be used as a camera tracking platform. Mint condition. Best Offer. Call: John Gleason, 415-792-8248 2/89

CELESTRON SUPER C8, eyepieces, accessory case, tripod, drive, and much more. Like new. $1500 or best offer. Call: 408-338-3503 6:00 pm sharp. 2/89

THE GREAT RED SPOT OF JUPITER
BY: JIM VAN NULAND

With the earlier Jupiter-set and later sunset, the Spot-watching season ends with April. The planet will be visible in the evening sky through May, but will be too low for beneficial observation at higher magnifications. So this column will take a vacation, to concentrate on Other Things, until late 1989. My thanks to those who told me of their own observations; you make this column worth doing.

It's interesting to note the relationship between Jupiter season and the calendar. The winter weather has prevented most observing in recent weeks; some years ago the winter weather was interfering with the recovery of the Spot. Since Jupiter's orbital period is 12 years, Jupiter season comes about a month later each year.

At the tabular times, the Spot faces directly toward Earth, and thus appears central on the apparent disk of the planet. Observations may be made for about an hour before and after that time, darkness and elevation permitting. I've widened the selection limits to include some events for which Jupiter will be rather low, when seeing may be a problem, to allow last-ditch efforts. Good luck!

Great Red Spot on Meridian PDT

da	mo	d	h	m		da	mo	d	h	m		da	mo	d	h	m	
Su	4	2	7	42	pm	Tu	4	11	10	4	pm	F	4	28	9	17	pm
Tu	4	4	9	21	pm	Su	4	16	9	14	pm	W	5	3	8	28	pm
Su	4	9	8	32	pm	F	4	21	8	23	pm						

SPACE PROGRAM UPDATE
BY: BOB FINGERHUT

DISCOVERY PUTS TDRS IN ORBIT

Discovery was launched into orbit on March 13, after a flawless countdown and a two hour hold for fog. Six hours after reaching orbit, the TDRS data relay satellite was released from the payload bay for transport to geosynchronous orbit. Once the TDRS is operational, NASA will have communications and television relay capability through more than 85% of every shuttle orbit. During the rest of the five day mission, the astronauts will conduct a variety of experiments. These include tests of a space station thermal control system, medical experiments, protein crystal growth for drug research and earth photography with a 70mm IMAX camera. Atlantis is being readied for the next shuttle flight on April 28. Atlantis is scheduled to launch the Magellan radar mapping satellite to Venus.

TEMPORARY REPRIEVE FOR LANDSAT 4 AND 5

The two satellites cost $500 million to build and to launch but Congress could not find $18 million to operate them this year. The Commerce Dept. ordered the two spacecraft turned off by March 30. Outraged, satellite data users and legislators appealed to Vice President Dan Quayle, Chairman of the National Space Council. The Vice President interceded and a interim operating plan was reached. Funds will be contributed by the Landsat data users. These include the departments of Defense, Agriculture, Interior, and NASA. The period that operation will be extended was not decided but will probably last until a review of U.S. remote sensing policy is conducted.

ARIANE LAUNCHES SATELLITES

The first of nine Ariane launches planned for 1989 was conducted by Europe's Arianespace. The payload was a JCSAT 1 telecommunications satellite for Japan and the Aerospatile Meteosat (MOP-1) weather satellite. The successful launch of the MOP-1 may allow an older Meteosat to be shifted toward the U.S., providing a replacement for the failed American GOES weather satellite.

LUNAR STUDIES GROUP FORMED

NASA has formed a Lunar Exploration Science Working Group. Its purpose is to develop new strategies for future exploration of the Moon with manned and unmanned vehicles.

DOUBLE, TRIPLE AND MULTIPLE STARS
BY: PATRICK DONNELLY

On these April evenings as you stare up at the stars to the south one finds that he is looking at a region of the sky richer in galaxies than any other. The region extends from Leo through Leo Minor and Virgo, Canes Venetici, Coma Berenices, and on into Ursa Major. You can imagine yourself looking out into the depths of the Universe. On the western edge of this super cluster of galaxies is the constellation Leo (the lion). Is is one of my favorite constellations, since Leo is my zodiac sign. In addition to the multitude of galaxies, Leo contains many fine double and triple stars of observing.

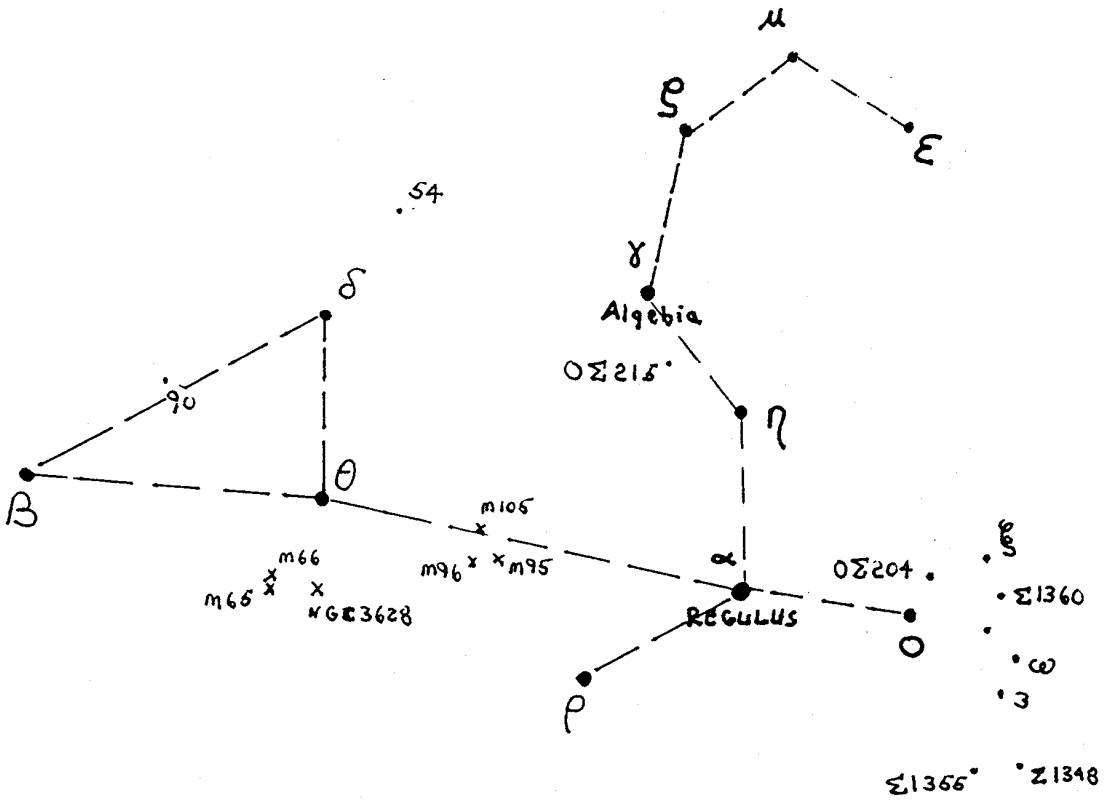
Begin your tour at Gamma Leonis (Algebia). This double star has been called one of the best if not the best double star in the sky. Its components consist of a 2.5 mag. primary and a 3.5 mag. secondary. The system is a true binary about 90 light years from the earth. The period of revolution is approximately 600 years, and at the 90 light year distance the separation is about 4.5". Gamma has a very special place for me since the radiant point for Leonid meteor shower is only about 2 deg. from Gamma. I can still vividly remember that night in 1966 as a freshman in college watching this incredible show. About two hours before dawn the estimated hourly rate was 126,000/hr. Just below Gamma is O-Sigma 215 consisting of a pair of 7 mag. stars separated by 1.1", orbiting each other once every 450 years (approximately). I use this star as a test of the seeing. If this double can be resolved using the 8" SCT, the seeing is excellent for double star observing.

After Gamma try Alpha Leonis (Regulus). Regulus is interesting in that the star is a real triple system. Regulus is about 85 light-years from the earth. The triple system consists of the 1.35 mag. primary, a mag. 8 secondary 177" from the primary, and a very faint 13th mag. third companion 2.6" from the secondary. The 13th mag. companion is very difficult to see. I have only observed it with the 30-inch telescope on Fremont Peak.

Just west of Regulus by about 8 degrees is an area full of doubles. Omicron Leonis consists of a mag. 4 and 10 pair separated by 85.4", which should be visible in most telescopes. Next to Omega is O-Sigma 204 consisting of a 6.5 and 10 mag. pair separated by 8". To the southwest of these two is Sigma 1360. This pair consists of approximately equal components of mag. 7.5 and 8 separated by 14.2". Just below Sigma 1360 by about 1.5 degrees is 6-Leonis. This star consists of a 6 mag. primary and a 9 mag. secondary separated by 37", which should be quite easy to resolve. Next to 6-Leonis is Omega. I have never resolved this star with any telescope, since the separation of its mag. 6 and 7 components is 0.4". If you do, please let me know. Finally, just below Omega is 3-Leonis consisting of mag. 6 and 10.5 mag. components separated by 25". The tour can be continued down into Hydra if you wish. About 2 deg. below 3-Leonis is Sigma 1348 and Sigma 1355 two close but resolvable doubles just inside the border of Hydra.

There are literally dozens of other doubles and triples in Leo with magnitudes and separations reachable by most amateur telescopes. Two of my favorites are 54-Leonis and 90-Leonis. 54-Leonis is a very pretty pair of 4.5 and 6.5 mag. stars separated by 6.5". This pair is probably a true system about 50 light years from the earth. The other star, 90-Leonis, is a fine triple. The primary component is a 6 mag. star with a mag. 7.5 component at 3.4" and another component at 63" with a magnitude of 9. The two companions to the primary have just about the same position angle; so all 3 stars are in about a straight line.

When you're finished with the doubles, don't pack up until you've observed the M65, M66, and NGC 3628 galaxies and the M95, M96, and M105 trio of galaxies. These galaxies are some of the best I've observed for a small telescope. Many a night has been extended about an hour just observing. All of these are members of the "Leo Galaxy Group" about 29 million light years from the earth. My favorite is M95 the SBb barred spiral. Be sure to include these in your tour of Leo.



COMET COMMENTS
BY: DON MACHHOLZ

Two faint returning comets have been recovered recently. Meanwhile, the Southern Hemisphere is being treated to comet Shoemaker-Holt-Rodriquez (1988h), discovered nearly a year ago. It will brighten to magnitude 10.5 by June, but will remain too far south for most of us to see.

Periodic Comet Pons-Winnecke (1989g): Jim Gibson of Palomar used a 1.5 m. reflector with a CCD to recover this comet on Jan. 17. At that time is was

mag. 20 and 8 months away from perihelion (1.26 AU). It may brighten to magnitude 11.5 this summer. Its orbital period is 5.5 years.

Periodic Comet Clark (1989h) J. Gibson recovered this comet too, on exposures taken Jan. 2. This comet also has an orbital period of 5.5 years but this time around it will remain faint.

All the comets recovered or discovered up to this point occurred during the first 17 days of 1989. This includes two amateur discoveries (Yanaka and Bradfield), three new professional discoveries (two of them by the Shoemakers) and three recoveries of returning comets (all by Jim Gibson). Activity has more recently quieted down.

SEEKING COMETS

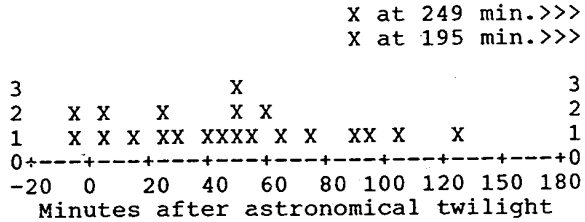
It is known that comet hunters enjoy seeking comets shortly after sunset in the evening and shortly before sunrise in the morning sky. This is because comets are generally brightest when near the sun, as seen from the earth. For those comets found in the evening sky, how long after evening astronomical twilight are comets found? And in the morning sky, how long before morning astronomical twilight are comets found? Today we explore these questions.

This body of data consists of the 45 comets found visually between Jan. 1975 and the end of 1988. There were 59 "discoveries" of these comets, that is, several comets had more than one discoverer. Eighteen comets were found by 23 discoverers in the evening sky. In four cases a comet was found in the morning sky before midnight, closer to the evening than to morning. These are shown in neither graph. Generally, however, comet hunters seek in the western sky in the evening and in the eastern sky in the morning.

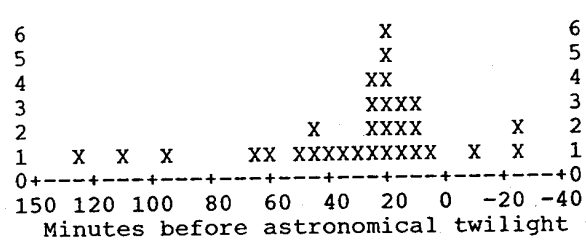
By "astronomical twilight" we mean the moment when the sun is 18 degrees below the discoverer's horizon. Most comet hunters begin evening sweeping when the sun is between 15 and 18 degrees below the horizon. The sky is then significantly dark for serious hunting while areas near the sun are high enough to still be visible. In the morning sky we often hunt a little longer into twilight, trying to get in that "one final sweep" before packing up and going home.

In the graphs below I identify each discovery win an "X" while the number of minutes before or after astronomical twilight (A/T) is listed along the bottom of the graph.

EVENING DISCOVERIES



MORNING DISCOVERIES



If we subtract the first and last of each, then take the average, we find that evening comet finds average 56.8 minutes after evening A/T. They are rather spread out. The morning comet finds average 30.4 minutes before morning A/T. They tend to cluster at the 20-minute mark. Why is that?

Since comets often travel westward in relation to the sun, they tend to be found in the morning sky as they move out of the solar glare and into the dark pre-dawn sky. This small part of the heavens rises within an hour of A/T and is the last portion to be swept by comet hunters.

In the evening sky comets generally brighten slowly as they pass opposition and into the evening sky. They are swept up at rather large elongations (distance in degrees from the sun as seen from the earth) as they brighten into telescopic range. Therefore, evening comet finds are more scattered, both in position and in time of discovery.

Let me touch upon one more point. Near astronomical twilight the sky is brightest at the horizon, and darker higher up. This is the best of times for comet hunting. If only the comet hunter could "freeze" the sky at this time, he could sweep all areas at their highest dark-sky altitudes. Because if we're looking at evening A/T, then as time progresses these portions of sky will set into the haze and potential comets become harder to see. If we're talking about morning A/T, then as time moves on, twilight creeps upward and brightens the sky, reducing contrast and hiding comets. Don Machholz (408) 448-7077

Open House

Fremont Peak Observatory
Saturday, May 6, 1989

All amateur astronomers in the Northern California area are invited to come up the mountain for a special pre-season observing session reserved just for them.

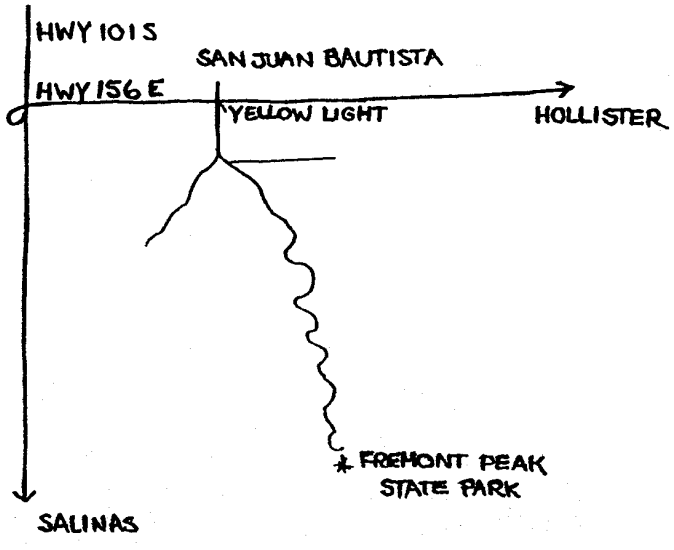
The public programs won't begin until Astronomy Day (May 13) so here is a great opportunity to use the 30" with fellow astronomers at one of the best dark sky sites in the region.

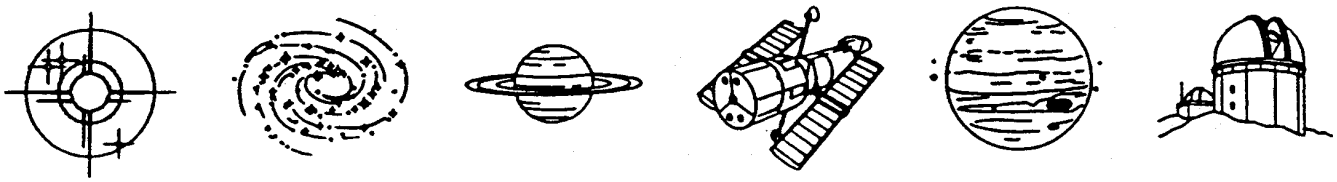
The 30" will be open from sunset on. Star party sites are available at the park for those who wish to bring their own telescopes. Event free of charge. Camping sites available at the normal State Park fee schedule. Refreshments will be available.

Info: (415) 654-6796 (Oakland)
(408) 623-4255 (Fremont Peak)

Sponsored by the Fremont Peak Observatory Association.

Take Highway 101 south towards Salinas. Take Highway 156E (San Juan Bautista). Go two miles to the yellow flashing light. Turn right onto San Juan Canyon Road. After two blocks, the road will "Y". Take the left fork and follow signs for Fremont Pk SP, 11 miles. The observatory is behind the ranger's house. You should park at Madrone or Coulter Camp and walk back.





SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP APPLICATION

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

Name:_____

Address:_____

_____

Telephone (____)_____

MAKE CHECKS PAYABLE TO **"SJAA"**

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

Jack Peterson, Treasurer
San Jose Astronomical Association
1840 Yosemite Dr.
Milpitas, CA. 95035

Telephone: (408) 262-1457

Please check type of membership and if New or Renewal

Membership only___ Membership/S&T___ Junior (Under 18)___ New___ Renewal___

SJAA EPHEMERIS
1840 YOSEMITE DR.
MILPITAS, CA 95035

NON-PROFIT ORGANIZATION

U.S. POSTAGE PAID

PERMIT NO. 5381

SAN JOSE, CALIFORNIA

TIME VALUE - DATED

NEWS MATERIAL