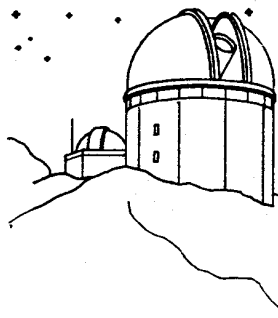


EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION



NOVEMBER 1988

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* NOVEMBER 5TH *
* W.J. SHILOH UNRUH *
* CHARLES FEIL - GLASS MAKER *
*

OCT 28, 29 MARS WATCH AT BRANHAM LAKE CITY PARK. SUNSET AT 6:10 PM
WITH MARS 16 DEG. UP. PAST-FULL MOON RISES AT 8:52 PM.

NOV 5 SHILOH UNRUH, LICK OBSERVATORY HISTORIAN, SPEAKING ON
CHARLES FEIL, THE GLASS MAKER WHO PRODUCED THE BLANKS FOR
THE LICK 36" CLARK REFRACTOR. 8 PM.

NOV 19 BOARD MEETING AT THE RED CROSS BUILDING, 6:30 PM. TO BE
FOLLOWED BY AN INDOOR STAR PARTY. THERE WILL BE A SHORT
DISCUSSION OF THE UPCOMING GRAZING OCCULTATION OF REGULUS.
AFTER THAT, ENJOY SOME GOOD VISITING. ANY QUESTIONS
YOU'VE BEEN WAITING TO ASK?

NOV 26 NO SJAA ACTIVITY; THANKSGIVING WEEKEND.

NOV 29-30 GRAZE OF REGULUS, 2 AM WEDNESDAY MORNING. LOCAL AND
CENTRAL VALLEY SITES. MORE DETAILS INSIDE AND AT THE NOV.
19 MEETING.

DEC 3 DICK HOGGLAND WILL SPEAK ON HIS EXAMINATION OF THE
EVIDENCE FOR THE CELEBRATED (OR INFAMOUS) FACE ON MARS.

DEC 10 STAR PARTY AT GRANT RANCH COUNTY PARK. SUNSET, 4:46 PM,
TWO-DAY OLD, 42 MOON SETS AT 6:12 PM, ASTRONOMICAL
TWILIGHT ENDS AT 6:23 PM.

DEC 17 SJAA BOARD MEETING. PLACE AND TIME TO BE ANNOUNCED.

FIELD OF VIEW
BY: JOHN GLEASON and JIM VAN NULAND
CHARLES FEIL - GLASS MAKER

Lick Observatory Historian Shilo Unruh will be speaking on Charles Feil for our November 5th General Meeting. Feil was the glass maker responsible for producing the blanks for the Lick 36" Clark refractor. You'll also find a Mt. Hamilton update by Mr. Unruh in this issue of the Ephemeris. General Meeting will begin promptly at 8 pm.

MISSING YOUR SEPTEMBER SKY & TELESCOPE?

It seems that there was a major blunder somewhere in handling the September issue of S & T. By now, members should have received the September issue. If you have not yet gotten one, write to them and ask for a replacement. Enclose a mailing label if you have one.

ASTRONOMY AND TELESCOPE MAKING REMINDER

The renewal period for Astronomy and Telescope Making magazines will close at the end of the November 5 General Meeting. Astronomy costs \$14; Telescope Making, \$8 for one year (12 or 4 issues, respectively). If you presently subscribe through the SJAA, you may send a check, preferably including a mailing label, to Jim Van Nuland, 3509 Calico Ave., San Jose, CA. 95124. Make a check payable to Jim Van Nuland, not the 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 1989. Send a mailing label and enough \$\$\$ to cover the remaining part of the 1989 subscription. Your subscription will be extended to synchronize it with the group renewal (calendar year).

MARS WATCH - '88

The MarsWatch series of public star parties were very successful, with about 300 people attending every clear evening. Hundreds more people are now aware that (1) there is such a thing as amateur astronomy, (2) there is an astronomy club in San Jose, and (3) Mars is orange, not red. Thanks to the many regulars and irregulars who gave up evenings and star parties to come to Branham Lane Park. John Dobson's measure of a telescope is the number of non-astronomers that have looked through it; SJAA members have some rather "large" telescopes!

MEMBERSHIP CARD CONTEST

Entries are now being accepted for a new membership card design. When entries stop coming in, a new card will be chosen, if a new entry is judged superior to the existing one. The Winner will receive a free year's membership to the SJAA!!! Enter early and enter often.

THE SEARCH FOR LIFE ELSEWHERE

Saturday, November 12, astronomer Andrew Fraknoi will present a full-day program on the search for life elsewhere in the cosmos on the University of California Berkeley campus. The program is cosponsored by the U.C. Berkeley Extension and the Astronomical Society of the Pacific. Topics to be covered include: The Exploration of Mars (and Martians We have Dreamt); New Discoveries about Planets and Planetary Disks Around Other Stars; Problems and Prospects of Interstellar Travel; and Searching for Signals from Extraterrestrial Civilizations. No science or math background will be assumed. For more information and a brochure, call UC Extension at 415-642-4111.

WHAT'S HAPPIN'N ON HAMILTON BY: W.J. SHILOH UNRUH

As most of you know, Lick Observatory is presently undergoing a much needed "face lift". Yet there are exponentially more from the general public who are not aware of this fact than within the ranks of the S.J.A.A.. Because of this unawareness, a new source of entertainment now exists at Lick. Madlem Construction Company, who is performing the restoration on Lick Observatory's Main Building, has restricted public access to that part of the mountain for reasons for insurance. To accomplish this, they have placed an impenetrable looking chain link gate across the last section of road leading up to that "ol" familiar parking lot that overlooks Santa Clara Valley. What makes this so entertaining, especially with bicyclists, is this. As one rounds that last sinister curve before reaching the lower observatory complex, the road straightens out in an uphill "runway". At the other end of this incline the road "T" intersects in front of the observatory's staff dining hall. Veterans pour on the speed, knowing that they will be making a sharp turn to the right, which will "whip" them up that last section of road to the Main Building. Three large windows of the diner strategically overlook this right hand part of the "T" intersection. The amusing entertainment is provided at no charge to astronomers and staff who are partaking of their meals. The three large windows afford a bird's eye view to those eating, of cars and bikes "zipping" around the corner, in front of the dinner. The look of surprise on the drivers' faces is priceless. They must now "slam" on their breaks, because someone has put a fence across the road where there wasn't one before! Several bikers and cars have almost crashed into the gate. Many exhibit "stunned" expressions on their faces. All of this couldn't really be happening, could it? After all of the "zig zagging" to the top of Mount Hamilton, not being able to complete their familiar journey seems, unbelievable. "Well believe it Ralph". This will be a fact of life until the early part of 1989!

Renovation on the historic Main Building was begun in May of this year. Astronomical records and instruments, not to mention the gift shop, all had to be moved out of the building. Openings on the first and second floors of the north part of the great hallway were cut out to make way for a new elevator. This will provide handicap and equipment access to the 40-inch Nickel Reflector's computer readout room.

Interior walls and ceilings were removed so that structural bracings could be placed on the inside of the old brick walls. The lecture hall may seem just a "tad" smaller the next time SJAA members go inside to hear one of the Friday

Night Lectures, for the Summer Visitors Program next year. It was interesting to see (and photograph) the original brick walls while all of this was being done. The locations of the two fireplaces that originally occupied the observatory's library, which is the present day lecture hall, were easily recognized by the smoke charred bricks which made up their rear extremities.

The work on the outside walls started in June. Their exteriors were "chiseled" away with modern day jack-hammers. This exposed the old red brick, formed and fired on Mount Hamilton a century ago. Sections of the outside brick walls were then chiseled with vertical "columns" into which steel bars were mounted. Webbed to these and the rest of the exterior walls were more steel reinforcement bars. On Thursday, August 18, 1988 the "shotcrete process" was started. Shotcrete, a concrete like mixture, is applied to "rebar" by means of a hose and nosel. The shotcrete is mixed with water, then pumped through a large machine to workers on scaffolding, forced against the old exterior walls. It is applied beyond the thickness of the web of steel reinforcement bars, then smoothed to the desired shape and pattern of the "new" wall. This work is currently underway.

At this time there has been little work performed on the brick chamber of the great thirty-six inch refractor. It is this portion of the Main Building that exhibits the "bulge" caused by the 6.2 magnitude earthquake of 1984. Due to the "delicate" condition of this portion of the Main Building, special planning and techniques are still being developed to perform this part of the observatory's restoration.

The great thirty-six inch lens was removed from the telescope for safety reasons. To best utilize the "down time" of the refractor, Lick Observatory opticians, Dave and Darrie Hilyard, have repolished the front element of the lens. It had developed miniscule pits and veins on the front surface. Exposure to the atmosphere over the last one hundred years caused this effect, known as "crazing" to occur. It only remains to put the lens back in the telescope for a final test on some stars.

When the task of reconstruction is completed, coupled with the fact that the thirty-six inch lens' "cataract" has been removed, the historic main building will be ready to pursue another century at the cutting edge of astronomical research.

ASTRO ADS

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 guidescope attachment, T-adaptor, 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, 2X 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! Asking \$1795. 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

MEADE 2080 with tripod and wedge. This is a fully equipped 8-inch catadioptric telescope with lenses, motor, and many accessories. It is not a stock telescope, but a special instrument provided by the vice president of Meade for astrophotography by personal request. It has superfine resolution and the best optics available for its size. It comes with case, dew heater, many Erfle, Plossl, wide-angle, etc. eyepieces. Best offer. Call Dave Klausner, 737-5260. 9/88

GRAZING OCCULTATION EXPEDITION BY JIM VAN NULAND

Wednesday morning, November 30 will see a graze of Regulus across the Bay Area and much of the United States. Our major expedition will go south of Patterson in the Central Valley. Go south on I-5; 18 miles south of the junction of I580 and I-5, take the Fink Road exit. We may use Ward Avenue, Davis Road, or Armstrong Road; call before you leave for final directions. Paper-plate signs will be posted from the I-5 exit. Details may be available earlier if we decide to make a preliminary inspections.

A nearby site is being sought, possibly south of Fremont, but weather prospects are somewhat better further away from the Bay, and city sites are usually problematic in several ways.

Site & Weather Update: I will go over on Tuesday to lay out stations, and will call home as soon as a road is chosen. I will also call at 4:50 pm Tuesday and Wednesday. You can call Florence before 4:45 to pass messages to me; or call after 5:00 to obtain my weather and site reports. (408) 371-1307.

CB: Channel 9 for directions, then 14 when on-station. Call for "Graze Chasers", or me, "Sunspot". Handy-Talkies, usually operating on ch.14, reach far enough to be useful on-station.

Equipment needed: Telescope: A driven scope is best. If not, you should note on the tape when you begin and complete movements of the scope. Tape Recorder: at least 30 minute tape. Radio: WWV at 5 and 10 MHz is usually reliable at night. Push-button tuning is best. Be sure the batteries are reasonably new. The radio must not be too close to the recorder! I put mine within arm's reach and use a hand microphone. Test on-station! Your voice must be audible over WWV.

Time: Start continuous record at 1:49 AM. Central graze time is 1:59 AM. Stop recording at 2:04 or 3 minutes after latest event, or when star is well clear of moon. Be set up and ready by 1:30. Arrive a bit early so I can assign stations. Allow plenty of time for finding station, setting up, testing equipment, finding moon, trying eyepieces, getting comfortable, etc.

Technique: Observing a graze is not difficult, but it requires careful attention during the observing run. Begin your tape with your name, the date, site letter, type of scope, mount, and magnification. Play back that much to be certain that your voice is audible, and that WWV can be heard when you are not speaking. At the beginning of the observing run, describe conditions. Say when you begin continuous observation, when you are interrupted, and when you return. You call out what is happening, instant by instant, into a tape recorder. I prefer to say OUT and IN as the star goes out and comes back. Even if you are uncertain, speak immediately, then comment. If you did not speak immediately upon an event, add an estimate of the delay. If the event was not instantaneous, try to estimate how long it took. When it's all over, add comments regarding general seeing conditions, degree of difficulty, confidence, etc.

Playback: Within a day or so, reduce your tape. Play it back, synchronizing a stopwatch to the WWV ticks. Then note the times at the shouted calls of OUT and IN, to determine exactly when the events occurred. You will find that the tape does not play back at exactly the same rate as the recorded WWV signals, so some adjusting will be needed. You may need to count seconds from the minute or half-minute mark (The 29th and 59th ticks are omitted). After a few passes, you can readily determine the times to a few tenths of a second. When all events are recorded to good accuracy, put down the estimated reaction time for each event, especially if there was any delay. Indicate events that may be doubtful. Save the tape for a year or so, in case questions arise (I have all of mine).

So, look around and find your short-wave WWV receiver and your battery tape recorder. At work, ask for vacation on Nov. 30 so you can sleep late after the graze. Jim Van Nuland will talk about grazing at the Red Cross on November 19, following the Board meeting.

THE GREAT RED SPOT OF JUPITER BY: JIM VAN NULAND

Recent observations find the Great Red Spot readily, nestled into the southern edge of the South Equatorial Belt. The belt material preceding (west of) the Spot is wider and darker than that following, so the Hollow has an asymmetrical appearance. At one of the public Mars Watches, the Spot showed well much of the time, appearing orange or salmon-pink. There is a slight dark line delimiting the south side.

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. The times are given in local time.

Last month's table was headed "PST" but in fact, the times were given in Darkness Squandering Time. This month's table is in standard time, and I hope I've gotten it right this time!

To see Jupiter's Great Red Spot, good seeing and a power of about 200-300 are needed. Focus carefully, then look eastward along the south edge of the southern equatorial belt, seeking a dent where the belt narrows to perhaps 2/3 of its width. This is the Red Spot Hollow; the Spot resides in it, protruding southward. Watch for those moments when the air is especially stable, and the Spot will show itself in all its glory.

Great Red Spot on Meridian PST

da	mo	d	h	m		da	mo	d	h	m		da	mo	d	h	m	
Tu	11	1	2	47	am	Tu	11	15	4	23	am	M	11	28	0	10	am
Tu	11	1	10	47	pm	W	11	16	0	14	am	M	11	28	7	55	pm
Th	11	3	4	31	am	W	11	16	8	1	pm	W	11	30	1	39	am
F	11	4	0	18	am	F	11	18	1	51	am	W	11	30	9	33	pm
F	11	4	8	7	pm	F	11	18	9	41	pm	F	12	2	3	25	am
Sa	11	5	6	8	am	Su	11	20	3	31	am	F	12	2	11	9	pm
Su	11	6	2	3	am	Su	11	20	11	19	pm	Sa	12	3	6	59	pm
Su	11	6	9	55	pm	M	11	21	7	7	pm	M	12	5	0	45	am
Tu	11	8	3	33	am	Tu	11	22	5	8	am	M	12	5	8	39	pm
Tu	11	8	11	28	pm	W	11	23	0	59	am	W	12	7	2	31	am
W	11	9	7	19	pm	W	11	23	8	52	pm	W	12	7	10	16	pm
Th	11	10	5	15	am	F	11	25	2	32	am	Th	12	8	6	14	pm
F	11	11	1	7	am	F	11	25	10	22	pm	F	12	9	4	1	am
F	11	11	8	55	pm	Sa	11	26	6	22	pm	F	12	9	11	55	pm
Su	11	13	2	48	am	Su	11	27	4	16	am	Sa	12	10	7	50	pm

SPACE PROGRAM UPDATE BY: BOB FINGERHUT

YES, WE ARE BACK IN SPACE

The crew of Discovery completed the mission started by the crew of Challenger 2 1/2 years ago. Discovery's main cargo was a TDRS satellite, the same as Challenger. TDRS is now in geosynchronous orbit and in excellent condition. The new TDRS along with a similar satellite launched in 1983, will expand U.S. space-based data relay capacity to 85% of the globe. This additional capacity will greatly increase the amount of data that can be returned from future shuttle and spacelab flights and other scientific satellites. One more TDRS must be launched before the Hubble Space Telescope. Following deployment of

the TDRS, the crew photographed numerous earth targets and worked with 11 secondary payloads in the orbiter mid-deck. Photographs were made of the east Mexican coast to study damage and coastal erosion from Hurricane Gilbert, Khartoum in the Sudan to study the worst flood in a century, and Senegal in Africa to aid in drought monitoring. Among the 11 secondary payloads was a protein crystal growth experiment. Discovery landed successfully at Edwards AFB on Oct. 3. Discovery came to a stop at the runways 995ft mark, only 7451 ft. from the touchdown point. Discovery was found to be in excellent condition after post landing inspections. The tires and breaks also performed well. The next mission, STS-27, is scheduled for late November or early December. Atlantis will carry a classified Military payload.

NOAA-11 METEOROLOGICAL SATELLITE LAUNCHED

The National Oceanic and Atmospheric Administration (NOAA) satellite is now in a near-polar orbit at an altitude of 470 nautical miles. NOAA-11 carries microwave sounding instruments, ozone monitoring instruments and search-and-rescue satellite-aided-tracking equipment. NOAA-11 joins NOAA-10 as one of two polar orbiting satellites collecting critical meteorological data for worldwide weather forecasting, storm tracking, global sea ice monitoring, and a variety of other uses.

ISREAL LAUNCHED ITS FIRST SATELLITE SEPT. 19

The Shavit (comet) booster put a 343 lb. spacecraft called Ofeg-1 (Horizon-1) into a 155 x 717 mile orbit.

Japan also successfully launched a communication satellite on Sept. 16 on a H-1 booster from Tanegashima Space Center. China successfully launched a weather satellite on Sept. 6 on a Long March 4 booster. A European Ariane 3 successfully launched 2 U.S. communication satellites on Sept. 8. The SBS-5 satellite is functioning normally in geosynchronous orbit, but the Gstar-3 satellite is not. A malfunction caused the Gstar-3 to veer out of control during its apogee kick-motor firing at 22,000 mile altitude.

LANDSAT OPERATION CUT BACK

Satellite image acquisition will be severely curtailed beginning Nov. 1 due to insufficient funds for operating the two remaining Landsats in 1989. Congress appropriated only about \$9 million to operate Landsats 4 and 5 in Fy 1989, although the operating costs were estimated at about \$26 million.

DOUBLE, TRIPPLE AND MULTIPLE STARS BY: PATRICK DONNELLY

On these Autumn evenings there stands high in the western sky a constellation literally full of double and multiple stars. This constellations is, of course, Cygnus (the Swan or the Northern Cross). The probable reason for the large number of multiple stars is its position relative to our galactic plane. The center of the Milky Way runs through the heart of Cygnus. On occasion it is interesting just to point one's telescope at Cygnus and just wander through the stars. However, if one would like to conduct a guided tour, here are some special stars to observe.

Begin your journey at Albireo (Beta Cygni). Regardless of your speciality, you owe it to yourself to observe this star. This star is a double star with a yellow third magnitude primary and a blue sapphire secondary at magnitude 5. Their separation is 34", which puts this star in range of all telescopes and most binoculars. It cannot be overstated that the colors of this double are quite intense. The distance to Albireo is about 410 light years, and there is some debate as to whether this double constitutes a physical pair. The spectroscopic parallax of each suggests "yes", but the polarization measurements say "no". While observing Albireo keep in mind that the bright yellow primary component is also a spectroscopic double.

The next star to observe is Delta Cygni. This star is a close double and rather difficult to resolve. The magnitudes are 3.0 and 6.5 separated by about 2.2 - 2.5", which explains the difficulties in separating the pair. A good three or four inch telescope at high power with good seeing is required to separate the two stars. Delta is a true physical pair with a period of approximately three hundred years and located about two hundred seventy light years away. After observing Delta try Gamma Cygni. Gamma has a pair of tenth magnitude companions 142" away. The companions are separated by about 2". Therefore, the use of plenty of power is required. From Gamma go next to Eta Cygni. Eta has three very dim companions, all magnitude eleven, with separations of 7.2", 46.0", and 49.5". The close in companion is a physical member with Eta. The others are optical. To see this family a large aperture telescope and dark skies are a must.

After observing at the center of Cygnus observe MU Cygni near the edge of the constellation. MU is a 4.5 magnitude primary with a 6th magnitude companion at 1.7", and 11.5 magnitude companion at 49", and another 6th magnitude companion at 200". The very close sixth magnitude companion is surprisingly easy to resolve. It has been resolved during most nights. It is a fine sight. While at MU travel a few degrees over to Upsilon Cygni. It is a true tripple system with one companion at 15" and the other at 21.5". The primary is magnitude 4.5 and the companions are magnitude 10. They are just far enough away to be outside of the primary's glare. The view reminds one of a star and two small satellite stars.

For your next stop begin by using binoculars. This is because Omicron Cygni's two primary components, are separated by 338". One is yellow and the other blue, and the colors are quite vivid. Next train your scope on the area and note that Omicron-1 has a magnitude 7 companion at 107". There is also a magnitude 13 companion at 37". However, dark skies and an eight inch telescope is probably required to see all four (4) stars. Near Omicron is another bright double; Psi Cygni. Psi consists of a magnitude 5 primary and a magnitude 7.5 secondary separated by 3". Over 100x is required for a four inch telescope to resolve Psi. Just below Psi is 26-Cygni. This star is a tripple. The primary is magnitude 5.5 and the secondary is magnitude 8.5 at 41". This is easy, and what's more the yellow and blue double reminds you of Albireo. If you look closely, the blue secondary has a magnitude 11 companion at 9". I suspect that this dim star is actually about magnitude 12-12.5. It is very difficult to detect.

Finally, finish your observing tour by viewing 61-Cygni. 61-Cygni is located about halfway between Nu and Tau Cygni. It consists of a magnitude 5.5 primary and a magnitude 6.4 secondary separated by 26". This star is probably the most interesting on the tour; not because of what is visible but its history. 61-Cygni was both the first star to be recognized as having the components revolving about their center of mass, and it was the first star to have its geometric parallax measured. While you're observing 61-Cygni consider the history of this star, its proximity to earth -- only 10.3 light years, and its large proper motion, 5.22" per year. It is interesting to note that the most aesthetically dull of all the stars on this tour is the most important one scientifically.

COMET COMMENTS BY: DON MACHHOLZ

Periodic Comet Temple 2 remains in the evening sky, but it dims this month as it moves away from both the earth and the sun. Meanwhile, one new comet has been recognized on images taken from an earth-orbiting satellite. Comet Machholz dimmed significantly (by six magnitudes) as it rounded the sun in mid-September. Through early October there have been no visual observations and only one photographic record of the comet. The orbit appears to be a parabola, this means that it will probably never return.

Comet SMM 3 (19881): The Solar Maximum Mission Satellite has recorded this, its third comet, on images made June 27. The comet, observed for three hours on an inbound path, was not seen leaving the solar vicinity. Magnitude was -1, and it was probably a member of the Kreutz Sungrazing group.

Periodic Comet Tempel 2 (1987g)

DATE	R.A. (1950)	DEC	ELONG	MAG	NOTES
10-26	19h 54.5m	-30°40'	83°	9.9	North and eastward
10-31	20h 13.3m	-30°17'	82°	10.0	motion makes this
11-05	20h 31.8m	-29°42'	81°	10.1	comet set at nearly
11-10	20h 49.8m	-28°58'	80°	10.2	the same time all
11-15	21h 07.4m	-28°05'	79°	10.3	month long. By late
11-20	21h 24.3m	-27°04'	78°	10.5	Nov. it is 150 mil-
11-25	21h 40.8m	-25°57'	77°	10.7	lion miles from both
11-30	21h 56.6m	-24°45'	76°	10.9	the earth and the sun.
12-05	22h 11.9m	-23°28'	74°	11.1	You'll find it near
12-10	22h 26.7m	-22°08'	73°	11.4	M 30 on Nov. 24.

SEEKING COMETS

How does one determine the probability of comets and asteroids hitting each of

the planets? I don't know how I would go about it. But Carolyn and Eugene Shoemaker of the U.S. Geological Survey in Flagstaff, Ariz. are searching for comets and asteroids. As a result of this survey they have discovered (or co-discovered) 14 comets. For eight months a year, seven nights a month, they use the 18" Schmidt camera at Mt. Palomar to cover a large block (up to 15%) of the sky.

Some parameters, such as discovery positions are moon phase, are determined by the survey program. Comet 1988g was not found as part of the survey, but rather in a search for a known comet. Otherwise elongations were kept at > 120 degrees. All but one were found north of the equator, most were north of the ecliptic.

The periodic comets are generally found near the ecliptic. Most comets would not have been found by amateurs using present techniques and telescopes, but if we could reach mag. 14 while sweeping, we too could find some of the comets in this fainter class. Apparently there is a great reserve of dim comets out there with large perihelion distances.

MARSWATCH FOR MOM BY: DENISE HUTSON

On our first outing to a public star party, I decided to leave my C8 at home. With 10-15 other light buckets in attendance, I was certain this would be the night I would snag another one, in the form of Patti, a close family friend. For those of your responsible for the love someone else now shares with the cosmos, you know what I mean by "snag." Without the concerns of an unmanned scope, I was free to take her on a tour of larger apertures and deeper sky objects than she had previously seen. And it worked.

A few paces behind, my husband was coaxing our pre-schooler around tripod legs and DC power cables. Trying his best to get one good look at anything through the eyepiece, and with our "little counterweight" yanking on dad's other leg, he gave up. Fisher-Price lit the way (red light of course) on several rounds of Branham Lane Park after that.

Regardless, the first official Mars Watch of '88 was well underway. From all sides you could hear the ooh's and ahh's of first time observers. Early on, the rings of Saturn and maybe even the Ring Nebula; then later on, the huge spiral Andromeda just prior to the main event - Mars. About 200 people were treated to views and the telescopes on hand kept the lines short.

Refractors, reflectors and cat's of every size, shape and color were all trained on the Red Planet. And for those with the gusto to hang on into the chilly later hours, Jupiter rose to offer incomparable viewing.

I went again two weeks later, thinking that with the media roar over Mars now at a purr, I'd have more of an opportunity to sample the different types of scopes. Not so. The public was in strong attendance, but the number of scopes had dwindled. Lines for a turn at the eyepiece were more than double the count of two weeks prior. Feeling terrible for not bringing my scope, I took my turn at walks through Branham Lane Park with my son.

I arrived early the following week, scope in hand. I don't think I'll ever understand how one manages to polar align with the sun still setting. So by the time I finally managed to get set-up (with the kind help of Tom A. and Jim V.), a line had formed.

I developed a new attachment for my scope that night. "Ownership" took on new meaning as those unfamiliar with viewing stormed to the front for their first look at Mars. The occasional BONK of the eyepiece, or worse, was worth it though to be able to share the love of the hobby, and the knowledge, with a public truly desirous of the treat.

With every gasp of surprise at the view through an eyepiece, I began to understand part of the enjoyment of public observing sessions. Not to mention the opportunity to pick the brains of fellow club members until all hours! Of course the lateness had everything to do with my early arrival, in that telescopes still in use needed to be torn down before anyone could move their cars. You mean I'm stuck here talking about the stars all night? Gee...what a shame!

With MarsWatch '88 almost over (at this writing) I realize I can't wait another 17 years for it to return! So what's the next event?!

GENERAL MEETINGS

INDOOR STAR PARTIES

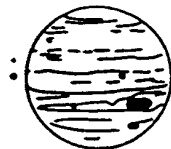
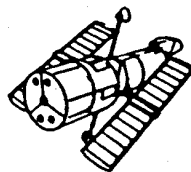
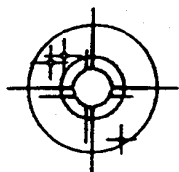
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