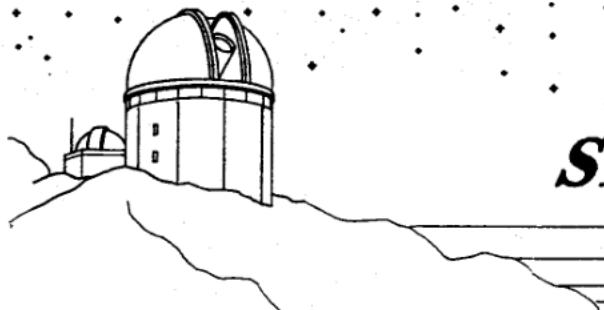


EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION



SEPTEMBER 1987

* SEPTEMBER 5TH 8PM *
* SLIDE AND EQUIPMENT NIGHT *
*
* OCTOBER 3RD 8PM *
* BOB WAGONER *
* SUPERNOVA! *

SEPTEMBER 5 GENERAL MEETING 8 PM, LOS GATOS RED CROSS BUILDING.
SLIDE AND EQUIPMENT NIGHT.

SEPTEMBER 12 SJAA BOARD MEETING AT 7 PM, LOS GATOS RED CROSS
BUILDING.

INTRODUCTORY ASTRONOMY CLASS WILL MEET AT THE FREMONT
PEAK OBSERVATORY AT 8:30 PM IN FREMONT PEAK STATE PARK.

SEPTEMBER 19 FIELD EXPEDITION FOR ASTRONOMICAL OBSERVATION TO FREMONT
PEAK STATE PARK. DUSK TILL DAWN.

AANC CONFERENCE AT THE LAWRENCE HALL OF SCIENCE, BERKELEY

SEPTEMBER 26 FIELD EXPEDITION FOR ASTRONOMICAL OBSERVATION TO GRANT
RANCH COUNTY PARK. DUSK TILL DAWN.

OCTOBER 3 GENERAL MEETING 8 PM. BOB WAGONER, LOCKHEED SCIENTIST
WILL DISCUSS THE RECENT SUPERNOVA SN1987A IN THE LARGE
MAGELLANIC CLOUD.

OCTOBER 11 BOARD MEETING AT 7 PM, LOS GATOS RED CROSS BUILDING.
INTRODUCTORY ASTRONOMY CLASS WILL MEET AT THE RED CROSS
AT 8:30 PM AND WILL THEN MOVE TO THE WEST VALLEY COLLEGE
PLANETARIUM.

OCTOBER 17 FIELD EXPEDITION FOR ASTRONOMICAL OBSERVATION TO FREMONT
PEAK STATE PARK. DUSK TILL DAWN.

OCTOBER 24 FIELD EXPEDITION FOR ASTRONOMICAL OBSERVATION TO FREMONT
PEAK STATE PARK. DUSK TILL DAWN.

FIELD OF VIEW BY: JOHN GLEASON

AANC CONFERENCE

The Astronomical Association of Northern California will be holding its annual conference this year on September 19-20 at the Lawrence Hall of Science in Berkeley. Talks on astronomy, equipment, and astrophotography will be featured. For more information contact Don Stone, AANC President, 415-376-3007.



SLIDE AND EQUIPMENT NIGHT

Plan now to attend the September 5th Slide and Equipment night. Featured will be equipment demonstrations, recent slides of the Riverside Telescope Makers Conference and selected astrophotography from club members. This is usually one of our best attended meetings. I expect to see hundreds of members there

with their telescopes. I have been told that there may even be an appearance of the famous "Clacking Duck Feet".

SUPERNOVA!

Lockheed scientist Bob Wagoner will be our guest speaker for our October 3rd General Meeting. The recent supernova in the Large Magellanic Cloud has certainly attracted a lot of attention in both the professional and amateur community of astronomers. Bob will be discussing the latest information about this grand celestial event. Mark your calendars!

FISHING FOR STARLIGHT

I want to personally thank the 70+ members who attended my August 1st presentation on current trends in astrophotography. Your complements and interest in the program made all of the work worth the effort. A number of members offered helpful suggestions to the slide portion of the talk, and I am happy to say that I have already incorporated a number of these changes to the original program. If there is enough interest, I could be persuaded to run the slide program again on the slide and equipment night. There was also a lot of interest in the music that accompanied the slides. The music was from a tape called, Return of the Comet by David Lange. As far as I know, the tape is only available from the Hearts of Space, P.O. Box 31321, San Francisco, CA. 94131. Sorry, it is not available on Compact Disk at this time.

ASTRO CLASS TO MEET AT OBSERVATORY

The Introductory Astronomy Class conducted by Jack Ziders will be meeting at Fremont Peak this month instead of the Red Cross. On September 12, meet Jack at the Fremont Peak Observatory at 8:30 PM for an evening of observational astronomy.

ASTRO ADS

FOR SALE: 5-INCH F/14 REFRACTOR on Super Polaris mounting. With Dual Axis drive corrector. \$1200 complete. Contact: Paul Mancuso (408) 946-0738.

REWARD: \$200 for information leading to the recovery of ultra-thin (1" thick) 18.75 f/5.6 mirror stolen from my house in Mill Valley on June 23, 1987. Easily identifiable. Contact: Rick Decker, (415) 956-7070 or 383-6339.

FOR SALE: MEADE 2" focuser with 1.25 adapter, unused, \$50.00. Televue 32mm 1.25", \$75.00, like new. Contact: Rick Decker, (415) 956-7070 or 383-6339.

BACK TO AYERS ROCK, A SUPERNOVA ADVENTURE BY: ERNIE PIINI

WALTZING WITH ERNIE

I went back to Australia, in full regalia:
I'm wishing you could have been with me too.
Off to Ayer's Rock, full of hope, with my cam'ras and my scope,
So I could write this report just for you.

Waltzing matilda, waltzing matilda
The Supernova I wanted to see.
With the darkest of nights
filled with stars and heaven's other sights,
You'll come a waltzing matilda with me.

by May Coon



Last year, after returning from an exciting trip to the center of Australia to view Halley's Comet, I remarked how I'd love to go back to Ayers Rock even if it meant waltzing my matilda (bed roll) and telescope from Sydney across the treacherous Outback to get there. This dream came true this year, when Sky and Telescope Magazine announced an astrophotography workshop to this same area. There was little hesitation then to join 23 others, including my friend Joe Shrock of Mountain View, to partake of the competent leadership and expert technical guidance of Dennis di Cicco, of Sky and Tel's editorial staff, and to return to the astronomical wonders of those dark-darkskies of the Southern Hemisphere. The opportunity to develop new equipment, try different films, and test new techniques in this astronomers' paradise was not to be missed.

An unscheduled, exciting, and most welcome bonus was the naked eye view of Supernova SN1987A, in the Large Magellanic Cloud (our closest galaxy). This dying star phenomenon occurred over 160,000 years ago. The tell-tale light and neutrinos from this explosion reached Earth on 24 February 1987.

It was hard to conceive that the light we were seeing originated when much of our Earth was covered by glaciers, buffalo with 13-foot horn spans roamed the plains, intelligent beings (*Homo Sapiens*) populated the Savanas, but Neanderthal man had not yet emerged.

Although numerous supernova discoveries are made by astronomers using telescopes, those visible to the naked eye average only four every millennium (1000 years). SN1987A is the brightest supernova observed since Johannes Kepler discovered one in 1604. Furthermore, a supernova emits the necessary ingredients required to create living beings; without them there would be no life on Earth!

The workshop group met at the San Francisco International Airport to begin our 15-day trip to Australia. We lost most of Easter Sunday by crossing the International Dateline, much like I lost my birthday on the way to the Papua New Guinea Eclipse in 1984. We spent two days in Sydney before going on to the Yulara Resort at Ayers Rock.

After checking in at the Sheraton Ayers Rock Hotel, the busy routine of unpacking and assembling our equipment and loading cameras began. A sumptuous dinner at 5:00 PM had to be rushed (it shouldn't have been, it was so good). We dashed (to beat the vicious flies) back to our room for warmer clothing, loaded our equipment on the bus at 6:00 PM, and rode out to the viewing site on the South side of Ayers Rock for a night of photography. We returned to the hotel in the "wee hours", grabbed an hour or two of sleep, ate a "cholesterol-full" breakfast, processed our color slides using our bathtub to stabilize the photographic solutions, attended technical discussions and photo evaluations, studied our previous nights results and mounted slides, ate another hurried dinner, and climbed back on the bus at 6:00 PM to start all over again.

The dazzling night skies in the Outback left us almost speechless. Besides the special thrill of seeing and photographing the brilliant Supernova 1987, we also saw Comet Wilson near the Southern Horizon and several sky-blazing meteors, some of which left smoke trails lasting over 15 minutes! The Milky Way above us, our only light in this darkest of dark-sky country, was so bright that we could see our shadow.

We were fortunate to have had four nights of excellent skies out of six scheduled outings near "The Rock". Late on the fourth night clouds moved in and by morning heavy rains came to the "land of little rain." The downpour drove thousands of 5-inch centipedes out of the red earth and into our hotel rooms. Most of us were thankful for the break and the welcomed a chance to rest as the busy routine was taking its toll. A tired mind does strange things: like leaving lens covers on three cameras during a twenty minute exposure, or forgetting to start the timer and wondering why this exposure was taking so long??? I was so tired on the fourth night that the bright stars; Sirius and Canopus appeared to be moving around like UFOs. Now I know why people sometimes report strange unidentified flying objects; especially when the bright planet Venus appears in the evening or morning skies.

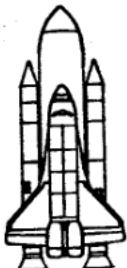
I had hoped to climb the 1143-foot high rock on our only free morning but rains and the slippery clay-like soil eliminated my chance. We did ride out to the colorful Olgas amid pools of rainwater.

On the bus ride to Alice Springs we stopped at the Henbury Meteorite Craters, 130 km south, to study the three closely spaced indentations. This interesting configuration resulted from a meteorite that had broken into three parts before hitting the earth about 5000 years ago.

We had one additional night for more astrophotography in Alice Springs but were hampered by nearby outdoor lights, and later with fog and dew. The next morning we toured the old telegraph station and saw the springs with was named "Alice" after the wife of Sir Charles Todd, the Superintendent for the 2000-mile Telegraph line constructed between Adelaide and Darwin.

Our last two days of the tour, spent in Honolulu, gave us a chance to shake off the red dust of the Australian Outback, revisit the Battleship Arizona memorial, and hike up to the Punchbowl National Cemetery of the Pacific. There we saw the recent gravesite of astronaut Lt. Col. Ellison Onizuka, one of seven astronauts who died in the January 1986 Challenger mishap.

The workshop was a great success. The supernova alone was worth the price of the trip. My experiments and equipment had worked much better than expected, and I am very proud of the photographic results. Would I go back to the "Rock" again? You bet your sweet jumpbuck I would; even if I had to waltz my matilda, my telescope and the Americas Cup all the way from Sidney to Fremantle, if that's what it takes. G'day Mates



SPACE PROGRAM UPDATE BY: BOB FINGERHUT

ONBOARD MIR

On 12 and 16 June, two Soviet cosmonauts went outside their Mir space station and installed a third solar array. The increase in electrical power, above the original 10kw was needed to support the Kvant astrophysics module that was added in April. On 22 July a Soyuz crew of three was sent up to visit the crew of Mir. One of Mir's original crew was replaced when the Soyuz returned to Earth on 30 July due to changes in his electrocardiogram. After returning to Earth his health was found to be fine. On 25 July, Mir flew over the SJAA star party at Fremont Peak, impressing a large group that was gathered around the 30" telescope.

SOVIETS LAUNCH LARGE EARTH SURVEY PLATFORM

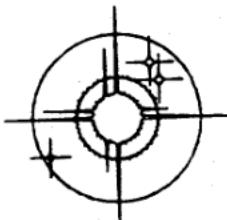
The huge Earth resources/ocean survey platform (15-20 tons) is the largest civilian Earth survey spacecraft ever launched. The spacecraft is comparable to one identified as a key element in U.S. space goals according to a report being prepared by Sally Ride.

RIDE PANEL FINISHES NASA GOALS REPORT

Sally Ride's report recommends establishment of a U.S. base on the Moon as a stepping stone to a later manned Mars capability. Ride believes the U.S. must build a strong space infrastructure, gradually expanding deeper into space. Release of the report was scheduled for 3 August. Members of Congress have stated that they do not want the Ride report to get buried in some bureaucratic maze in the Office of Management and Budget, the White House, or the Economic Policy Council. The White House has still not released a response to the National Commission on Space report that was completed a year ago.

NASA ACCESS TO WHITE HOUSE CUT

NASA has been unable to get visibility in the White House for NASA programs. In July NASA was scheduled to give the President a briefing that was to show the disparity between the U.S. and Soviet space programs. It was canceled at the last minute by the president's science advisor, William R. Graham, because it lacked a detailed military assessment. A Department of Defense briefing on the USSR's booster capability was substituted. The briefing is to support the Air Force's heavy lift launch vehicle program.



COMET COMMENTS BY: DON MACHHOLZ

Two returning comets have been recovered. Three faint comets remain visible in our skies.

Periodic Comet Russell 2 (1987q): P. Jekabsons and J. Johnston of Perth Observatory recovered this comet on July 1. This was also the time of its closest approach to the sun (2.15 AU). It appeared nearly stellar at mag. 20. "Russell 2" would be several magnitudes brighter. However, this is the best we can expect.

Periodic Comet Reinmuth 1 (1987r): The team of J. Scotti and T. Gehrels recovered this comet on July 22 at mag. 20. They used the 36" Spacewatch telescope at Kitt Peak. Comet Reinmuth 1, not to be confused with Reinmuth 2 which is also visible in our skies, has an orbit of 7.3 years and will be closest the sun next May. At that time it may reach mag. 15.

EPHEMERIDES

DATE	R.A. (1950)	DEC	ELONG	MAG.	NOTES
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Periodic Comet Klemola (1987i)

08-23	00h 23.0m	+06° 09'	141°	11.6	Comet Klemola, traveling at 17 miles
08-28	00h 25.1m	+05° 22'	146°	11.6	per second, is up all evening. It
09-02	00h 26.5m	+04° 29'	151°	11.6	was closest the sun in late July (1.8
09-07	00h 27.2m	+03° 29'	156°	11.7	AU) so now its pulling away from the
09-12	00h 27.3m	+02° 24'	161°	11.7	sun while its closest to us (0.87 AU)
09-17	00h 26.9m	+01° 17'	166°	11.8	in mid-Sept. This is a favorable
09-22	00h 26.2m	+00° 10'	172°	11.8	appearance of this comet, which has
09-27	00h 25.2m	-00° 57'	176°	11.9	an orbital period of 10.9 years. It
10-02	00h 24.2m	-02° 00'	175°	12.1	may be one mag. fainter than listed.
10-07	00h 23.3m	-02° 57'	170°	12.2	

Periodic Comet Borrelly (1987p)

08-23	02h 57.6m	-33° 19'	110°	11.7	This fine comet rises around 1 AM for
08-28	03h 05.2m	-33° 57'	112°	11.5	most of the month. During mid-Sept.
09-02	03h 12.4m	-34° 37'	113°	11.3	it travels against a background of
09-07	03h 18.9m	-35° 18'	114°	11.1	faint galaxies. Comet Borrelly has a
09-12	03h 24.8m	-35° 58'	115°	10.9	habit of starting out fainter than
09-17	03h 29.9m	-36° 37'	116°	10.7	predicted, then surpassing magnitude
09-22	03h 34.2m	-37° 14'	117°	10.6	estimates near perihelion. It will
09-27	03h 37.4m	-37° 47'	119°	10.4	be visible to us through the end of
10-02	03h 39.5m	-38° 14'	120°	10.2	this year. Watch it develop over the
10-07	03h 40.4m	-38° 33'	121°	10.0	next few months.

Periodic Comet Encke

08-23	13h 13.2m	-19° 00'	56°	9.5	Comet Encke remains a difficult ob-
08-28	13h 50.1m	-22° 31'	61°	9.9	ject, low in the evening sky. As it
09-02	14h 25.6m	-25° 11'	64°	10.3	becomes more favorably placed it dims
09-12	15h 27.3m	-28° 26'	69°	11.0	rapidly. So of its 3.3-year orbit,
09-17	15h 53.8m	-29° 18'	70°	11.4	we have only a few weeks this time in
09-22	16h 17.7m	-29° 48'	70°	11.7	which to observe it.

SEEKING COMETS

This month we'll discuss comet orbital elements. These are usually calculated for new comets within a week of discovery. As more positions are measured, more accurate elements are produced.

These six elements constitute a comet orbit. Most computer programs require only these figures in order to tell you where a comet will be at any time. To best visualize this, mentally place yourself above and far outside the Earth's orbit, looking down on the inner planets and the path of the comet.

Time of Perihelion (T): This is the Universal (or "Ephemeris", different than U.T. by a few seconds) date and time that the comet is at its closest point to the Sun. For periodic comets the orbital period is the amount of time between successive "T"s.

These next two describe the plane of the orbit: **Ascending Node():** The angle, in degrees as seen from the Sun, from the First Point of Aries (0 degrees on the ecliptic), to the comet's perihelion point. This is measured in the "direct" direction, regardless of the comet's motion.

Inclination (i): Defined as the tilt of the orbit, compared to the Earth's plane. If this is less than 90 degrees, the comet is in a direct orbit. If more than 90 degrees, then it is in a retrograde orbit. Those in the range of roughly 60 degrees to 120 degrees have a large tilt compared to the Earth's

plane.

This gives the orientation of the comet's major axis: Argument of the Perihelion (ω): The angle, in degrees as seen from the Sun from the ascending node to the comet's perihelion point. This is measured in the same direction as the comet's motion. If it is less than 180 degrees, the comet reaches perihelion after its ascending node point, meaning it is closest the sun when north of the ecliptic. If " ω " is > 180 degrees, the opposite is true.

These last two describe, in order, the size and shape of the orbit: Perihelion Distance(q): The distance, in astronomical units, from the Sun to the comet at its closest approach.

Eccentricity (e): The shape of the orbit. If $e < 1$, then we have an ellipse and the comet will return. If $e = 1$, it is a parabola and will return only in an infinite amount of time. If $e > 1$ then the orbit is a hyperbola and the comet will never return.

Here are some other terms you might find: Epoch: The time for which the orbit is calculated. This is especially important for small elliptical orbits which change slightly with each passage.

Daily Motion (n): The average number of degrees of motion per day. Calculated by dividing 0.98561 degrees by the orbital period in years.

Aphelion distance (a or Q): The greatest distance from the comet to the sun in A.U. This is used for elliptical orbits.

AN OVERVIEW OF OBSERVING SITES BY: DON MACHHOLZ AND RICH PAGE

Bear Creek Rd. winds southward from Hwy 17 near Lexington Reservoir, and over Summit Rd., ending in the town of Boulder Creek. It is along this road that I've found a small but good observing site.

This is not hard to locate. From the corner of Blossom Hill Rd. and Camden Ave. it is 11.6 miles and 24 minutes away. Take Hwy 17 (880) south to the Bear Creek Rd. exit. This is on the right, 0.3 miles past Black Rd. Travel up Bear Crk. Rd. for 3.1 miles. You'll then merge right (westward) onto Summit Rd. which also becomes Skyline Blvd. Continue on this road for 0.7 miles, then keep straight ahead on Bear Crk. Rd. as Skyline Rd. exits off to the right. The observing site is a turnout 0.48 miles past this point, on your left.

Don't expect a large area. The turnout measures 70 by 20 feet- it is on the south side of the road and runs east-west. With cooperation, four vehicles and telescopes can safely set up here. The south side is bordered by a bank so you don't have to worry about driving off the cliff. A telephone pole sits on the west end of the spot and wires run overhead. The surface is dirt, both packed and loose, sloping towards the south.

The horizon is lowest (0 degrees) from the southeast through the south and to the southwest. Then there's a gradual rise to a maximum of 20 degrees in the north, trailing to 16 degrees in the northeast and falling to 0 degrees again in the southeast. Light pollution is worst in the north, but the high horizon tend to keep the bright sky from ruining your night vision. There is also a small dome of light over Santa Cruz, which is 12 miles due south. Otherwise the sky is quite dark, with the Milky Way easily visible, although haze at this level (about 1600 feet) or above will decrease contrast. Wind is usually not a problem here. On occasion low clouds could creep up onto this elevation.

Animals are rare, although I have seen deer within 100 yards of here and someone's pet dog once came by to visit me. Sometimes a jogger will run by. Vehicles do not stop, for the most part. There are some homes in the area, but the only one you're likely to be aware of is 150 yards to the NE.

Perhaps the biggest disadvantage is the traffic. Even in the early morning hours you could have a half-dozen cars drive by each hour. Arranging your vehicle to block light is possible but not easy. A light shield around your eyepiece, an eyepatch, or sunglasses, might help too.

A problem might occur if you arrive at the site only to find it occupied by "parkers", photographers or anyone else with whom you might not wish to share the site. Backup sites should include the small parking area 0.48 miles back up the road at the intersection of Bear Crk. and Skyline Roads, or the Saratoga Gap site, 11 miles away.

SJAA MEETING AND STAR PARTY LOCATIONS

GENERAL MEETINGS

Once a month the SJAA holds a General Meeting at the Los Gatos Red Cross building in Los Gatos California. 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 famous "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 1.5 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 usually beginning at 8 PM.

INDOOR STAR PARTIES

Each month there are several 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 its 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 directions to these locations.

FREMONT PEAK STATE PARK

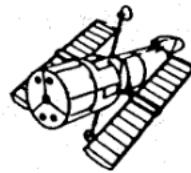
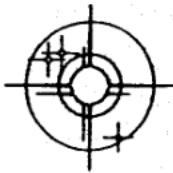
The most popular of locations for bay area amateur astronomers is Fremont Peak State Park. Located 70 miles south near the town of San Juan Bautista, Fremont Peak rises nearly 3000 ft. above the valley. For two decades amateurs have gathered at the "Peak" during New Moon weekends for serious deep sky observing and astrophotography. Fremont Peak is now the home of the Fremont Peak Observatory Association's 30-inch telescope that is open to the public on selected weekends. To get to Fremont Peak from San Jose, take Hwy. 101 South towards Salinas. Then take Hwy. 156 East (San Juan Bautista exit) for two miles to a yellow flashing light. Turn right and go about 1/4 mile to where the road reaches a "Y". Stay 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 and into the park. The SJAA sets up in the Coulter Camp area. It's visible on your right as you first drive into 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.

* EPHEMERIS is published monthly by the San Jose Astronomical *
* Association, 3509 Calico Ave., San Jose California, 95124. *
* Contributors are welcome to submit articles for publication. These *
* should be typed and submitted no later than the 12th day of the *
* month. All submissions should be sent directly to the editor, John *
* Gleason, 5361 Port Sailwood Dr. Newark, CA. 94560. *
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SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP APPLICATION

MEMBERSHIP ONLY: \$ 10 MEMBERSHIP/S&T: \$ 24.00 JUNIOR (UNDER 18): \$ 17.00

Name _____

Address _____

Telephone (____) _____

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

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

[Phone: (408) 262-1457]

Please check type of membership and if new
or renewal.

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What are your astronomical interests (e.g. astro-
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Do you own a telescope? _____ If so, what kind?

Is there any specific area of astronomy that you feel
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