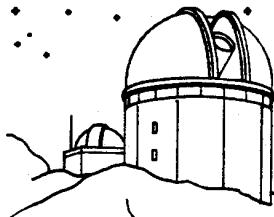


EPHEMERIS

OF THE SAN JOSE ASTRONOMICAL ASSOCIATION



FEBRUARY 1987

FEBRUARY 7TH 8 PM *
ROBERT SCHEAFFER *
THE UFO VERDICT *
EXAMINING THE EVIDENCE *
*
MARCH 7TH 8 PM *
BERNIE HAISCH *
GRAND TOUR OF THE SOLAR SYSTEM *

FEBRUARY 7 GENERAL MEETING 8 PM, THE LOS GATOS RED CROSS BUILDING.
THE UFO VERDICT. ROBERT SCHEAFFER. SJAA BOARD
NOMINATIONS AND ELECTIONS BEGIN AT 8 PM.

FEBRUARY 14 BOARD MEETING AT 7 PM WITH THE INDOOR ASTRONOMY CLASS
STARTING AT 8 PM, LOS GATOS RED CROSS BUILDING.

FEBRUARY 21 SECOND IN A SERIES OF FREEZE PARTIES FOR ASTRONOMICAL
OBSERVATION TO HENRY COE STATE PARK. DUSK TILL FROZEN.

FEBRUARY 28 FIELD EXPEDITION FOR ASTRONOMICAL OBSERVATION TO FREMONT
PEAK STATE PARK. DUSK TILL DAWN.

MARCH 7 GENERAL MEETING 8 PM, THE LOS GATOS RED CROSS BUILDING.
BERNIE HAISCH, GRAND TOUR OF THE SOLAR SYSTEM.

MARCH 14 INDOOR ASTRONOMY CLASS STARTS AT 8 PM, LOS GATOS RED CRO
BUILDING.

FIELD OF VIEW BY: JOHN GLEASON



FEBRUARY 7TH GENERAL MEETING

Seen any UFO's lately? As an Amateur Astronomer, how many times have you been asked that question? Yes, I do believe that some people have seen things that they could not identify. On February 7th, Robert Scheaffer will present; The UFO Verdict -- Examining the Evidence. Mr. Scheaffer asks whether UFO's are extraterrestrial visitors, mere nonsense, or a phenomenon even more bizarre than anyone now imagines. Mr. Scheaffer will attempt to explain the unexplainable for us beginning at 8 PM. Don't miss it.

SJAA BOARD NOMINATIONS AND ELECTIONS FEBRUARY 7TH

Five board positions will be open for nomination this February 7th. At the beginning of the General Meeting, nominations will be entertained with voting to follow. If you are interested in becoming part of the driving force behind the SJAA, this is your opportunity. If you would like to run for a position on the board, please let either Bob Fingerhut or Jim Van Nuland know before the start of the meeting, or have someone nominate you.

7th ANNUAL BAY AREA ASTRONOMICAL AUCTION

It's coming and you can't ignore it. No matter where you hide, you can't escape from it. Just when you thought it was safe to go back to the SJAA, everywhere you turn are old eyepieces, cameras, telescopes, old books and old astronomers. Just as your accessory case was reaching critical mass it's time for: THE ASTRONOMICAL AUCTION! Coming May 2ND to a Los Gatos Red Cross near you!

THE
SAN JOSE ASTRONOMICAL ASSOCIATION'S

7TH
ANNUAL
**BAY AREA
ASTRONOMICAL
AUCTION**

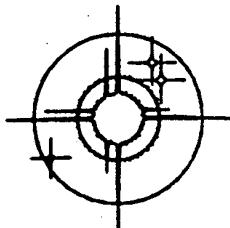
WILL BE :

SATURDAY MAY 2ND AT 6:00 PM
AT THE LOS GATOS RED CROSS
16011 LOS GATOS-SARATOGA RD.

DOORS WILL OPEN AT 2:00 PM

TELESCOPES, EYEPIECES, MOUNTINGS, MIRRORS, LENSES, CLOCK DRIVES,
BOOKS, CAMERA GEAR, STAR CHARTS, FINDERS, TUBES, DIAGONALS, & PHOTOS
Everything you need to make your hobby more enjoyable. You name it -
it will likely be there. Check your garage and closets for anything
astronomical you would like to sell. Complete the pre-registration
information form on the back and save time and trouble. Anyone may
buy and sell! It's fun and easy! See you there.

PLEASE PRE-REGISTER ALL ITEMS



COMET COMMENTS BY: DON MACHHOLZ

One new comet has recently been discovered. Meanwhile, it has been learned that Comet Lovas (1986p) is a periodic comet. It was closest the sun at 1.4 AU last August and will return in 6.5 years.

The year 1986 saw 16 comets recovered or discovered. This is the average number for recent years. Six returning comets were recovered, while seven new comets were found by professional astronomers, usually when they were involved in some other type of work. Amateur astronomers discovered three comets; this is about average. Surprisingly, two of these comets were found by photographic means. While such finds have been rare, perhaps in the future we'll see more and more of them.

Comet Levey (1987a): This new comet was discovered Jan. 5 by David Levey of Tucson, Arizona. When found, the comet was in the northern morning sky at magnitude 10 and traveling southward at nearly a degree a day. I have no orbit for it at this time.

DATE	R.A. (1950)	DEC	ELONG	MAG.	NOTES
Comet Sorrells (1986n)					
01-25	23h 52.4m	+11° 47'	60°	9.2	This comet has been two magnitudes
01-30	23h 48.6m	+11° 18'	54°	9.2	brighter than predicted, these estimates are therefore re-adjusted.
02-04	23h 45.6m	+10° 55'	48°	9.3	It is south of the Square of Pegasus
02-09	23h 43.2m	+10° 38'	43°	9.3	and it sets shortly after twilight
02-14	23h 41.3m	+10° 25'	37°	9.2	by the end of the month. We'll see
02-19	23h 39.8m	+10° 17'	32°	9.3	it again in mid-April in the morning
02-24	23h 38.5m	+10° 11'	27°	9.2	sky.
03-01	23h 37.5m	+10° 09'	23°	9.2	

01-25	23h 52.4m	+11° 47'	60°	9.2	This comet has been two magnitudes
01-30	23h 48.6m	+11° 18'	54°	9.2	brighter than predicted, these estimates are therefore re-adjusted.
02-04	23h 45.6m	+10° 55'	48°	9.3	It is south of the Square of Pegasus
02-09	23h 43.2m	+10° 38'	43°	9.3	and it sets shortly after twilight
02-14	23h 41.3m	+10° 25'	37°	9.2	by the end of the month. We'll see
02-19	23h 39.8m	+10° 17'	32°	9.3	it again in mid-April in the morning
02-24	23h 38.5m	+10° 11'	27°	9.2	sky.
03-01	23h 37.5m	+10° 09'	23°	9.2	

01-25	11h 10.4m	-16° 13'	126°	12.2	Its now been a year since Halley's
01-30	11h 05.4m	-16° 01'	132°	12.3	was closest the sun; now it is nearly
02-04	11h 00.1m	-15° 46'	137°	12.3	out to the orbit of Jupiter and
02-09	10h 54.6m	-15° 26'	143°	12.3	still traveling at 11 miles per sec.
02-14	10h 49.1m	-15° 04'	148°	12.4	The comet retrogrades and moves north
02-19	10h 43.4m	-14° 38'	152°	12.4	during the next few weeks, as it
02-24	10h 37.7m	-14° 09'	156°	12.4	stays above the horizon for nearly
03-01	10h 32.2m	-13° 37'	158°	12.5	all night.
03-06	10h 26.7m	-13° 03'	159°	12.5	

Let's suppose you believe you have found a new comet. The fuzzy object is not plotted on the star charts, nor listed in the catalogs, and it shows motion against the stars. You have recorded its coordinates and estimated its magnitude and size. Now you are ready to tell someone about it, and at the same time, find out if needed it is a new comet.

The "clearinghouse" for new comet discoveries is the Smithsonian Astrophysical Observatory in Massachusetts. They also handle asteroid, nova and supernova discoveries. In a few countries a new comet is reported to the national observatory, which then relays it to the Smithsonian. In most countries, including the United States, the observer communicates directly with the Smithsonian.

A mistaken impression is that the Smithsonian will then confirm the comet discovery while you sit back and take it easy. Actually, the Observatory encourages you to try to confirm the comet yourself after you make your initial report. You do this by observing it the next night and recording its new position (motion), by photographing it, and/or by calling your astronomy friends and having them do these things. All reports are again sent to the Smithsonian.

Still, the Smithsonian will do what it can. In some cases major observatories around the world are notified and asked to confirm the comet's existence, but many times bad weather or busy schedules prevents response.

So how do you notify the comet clearinghouse, and what do you tell them? There is a numerical code that all serious comet hunters and all non-English speaking astronomers should use. This prevents translation and transmission errors and provides all the needed data. Copies of the encoding instructions are available from the Smithsonian. For most of you reading this, a word message giving essential information is all that's needed. The Smithsonian needs to know:

- * The type of object you're reporting (new comet).
- * The date and Universal time of discovery.
- * The position in Right Ascension to within 0.1 m and Declination to within 1 arcmin.; 1950 coordinates preferred.
- * The magnitude (brightness) of the comet.
- * The size (in arcmin.) and appearance of the comet.
- * The estimated daily motion: in RA minutes E. or W., and in arcminutes N. or S.
- * Your name, address and phone number.

DO NOT send this information by mail. DO NOT, in most cases, phone the Smithsonian—you may not reach the correct people in charge and your message may get lost. Rather, send a telex message (costing about \$14.00 for 20 words) or a telegram (Cost more and is usually slower). You do this by using the telex machine at work, or by calling a telegram service such as Western Union ((800) 325-6000 in the Western U.S.)

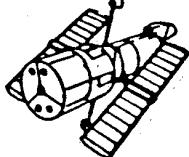
Send it to:

Central Bureau for Astronomical Telegrams
Smithsonian Astrophysical Observatory
60 Garden St.
Cambridge, MA. 02138
TELEX: 710-320-6842 ASTROGRAM CAM
Phone: (617) 495-7244, 495-7440.

Next month I'll cover further the role of the Smithsonian Observatory.

SPACE PROGRAM UPDATE BY: BOB FINGERHUT

VOYAGER 2's CLOSEST APPROACH TO NEPTUNE INCREASED



When Voyager 2 encounters Neptune on Aug 24, 1989, its closest approach will be 4800 Kilometers instead of the 1280 previously planned. The change was made to avoid orbiting rock and radioactive particles.

SPACE STATION AGREEMENT DELAYED BY DEFENSE DEPARTMENT

The U.S. Defense Dept. has reversed its earlier position that it has no requirements for use of the U.S./International Space Station. They now believe that they must protect their rights to conduct station based research even though they still don't know yet specifically what they would use the station for. The State Dept. has informed the international partners of this and negotiations on cost and management sharing have been delayed until a new U.S. position is determined.

SPACE STATION ORBITAL PLATFORM DOWNGRADED

The polar orbiting platform, that is part of the space station, will weigh only 12,000 pounds instead of the 30,000 - 50,000 pounds previously planned. Reasons given for the change are budget cuts and reduced shuttle launch capacity into high-inclination orbits.

SHUTTLE ESCAPE SYSTEM PLANNED

The system uses tractor rockets that would pull astronauts out of the orbiter's side hatch during gliding flight. Preliminary modification work on the orbiter Discovery am have already begun. It could be a pacing item if it is to be implemented in time for resumption of shuttle flights.

NEW SHUTTLE MANIFEST ISSUED

The new manifest calls for the resumption of flights on 18 Feb 1988. There would be 5 flights in 1988, 10 in 1989 and 11 in 1990.

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

In an attempt to find more locations from which to view the heavens, we will be reviewing many such posts over the next year. We begin with an area in the Santa Cruz Mtns.

The Saratoga Gap site can be a useful nearby moderately-dark location from which to view the stars. Located on the south side of Hwy 9, it has low horizons and a large set-up area.

The site is 17.8 miles (34 minutes) from the intersection of Blossom Hill Rd. and Camden Ave.; and 13.4 miles (25 minutes) from the intersection of Hwy 9 and Hwy 17. When you get to the intersection of Hwy 9 and Hwy 85, take a left, and head southwest. You are now 9.4 miles and 18 minutes from the site. Travel times are highly dependent upon traffic flow when you go here. At a distance of 1.9 miles past Skyline Blvd. (Hwy 35), you'll find a large dirt parking area on your left. This is it.

About a decade ago the location to the west of the parking area was accessible and used by the San Jose Astronomical Association for star parties. Now the road is gated off, and, although you may set up your telescope here, you will have to carry it from the parking lot. Because of this, most of the observing is done in the parking area.

Hwy 9 marks the north border of this lot, which measures over 150 X 100 feet. You could easily fit 25 cars here, and set up all the instruments right from the back of the vehicle. The surface is level, made of both loose and packed dirt. After a rain, a puddle forms near the west side of this lot, the water and surrounding mud can measure 40 feet across.

This spot sits at about 1600 feet elevation. This gets you above the haze, but not always above the fog and high humidity that sometimes builds up in the evenings. The horizons are low, the highest being east, where treetops reach 22 degrees. In the north they are 15 degrees, and in the west they peak at 7 degrees. From the southeast through the southwest the horizon is flat. By setting up at the west end of the lot you can lower your eastern horizon somewhat. The trees are quite useful though, they cut down on wind. Among mountain sites this is one of the least windy.

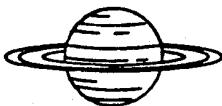
Because of San Jose and surrounding cities, moderate light pollution runs from the east through the north and to the northwest, to a height of about 40 degrees. The Monterey Bay Cities, visible to the southeast, also cast some light. But the greatest source of light pollution is from the cars traveling up and down Hwy 9. This can vary from two to two hundred cars an hour. While positioning your vehicle and scope will block most of this light, you must still contend with those "parkers" who occasionally pull off Hwy 9 and into the parking lot to talk, look at the stars, or any of a number of things.

This area seems to be under the jurisdiction of Castle Rock State Park, and occasionally a ranger will stop by to check things out. Show him the stars. He'll enjoy it as much as you.

THE CELESTIAL TOURIST SPEAKS BY: JAY REYNOLDS FREEMAN

DR. FREEMAN GOES TO SPACE CAMP!

My Ph.D is in experimental astrophysics. The scientific instrument that obtained my thesis data flew in the scientific instrument bay of the last Apollo spacecraft to fly, the one that docked with a Soviet Soyuz in the 1975 Apollo-Soyuz Test Project. The reduction of that data took a huge amount of computer time, and my research group at U.C. Berkeley did not have enough money and influence to get all of it locally. But NASA had lots of computers and was eager to help. In particular, the people at Johnson Space Center, who had handled the NASA side of the program to develop and fly our instrument, knew of the machine that might be just the thing. It was a CDC 6400, just like the one in the computer center at Berkeley, and it might be available free on nights and weekends. It was actually less expensive to pack me off to Texas with all



my paraphernalia, than to buy dozens of hours of computer time locally. So in the summer of 1977 I made a trip to Houston to reduce the data. I flew in on a Sunday afternoon, checked into my motel, and went off in search of the machine.

This particular CDC 6400 was not part of the regular computing facilities at Johnson, it was off in a smaller building just outside the perimeter road that ran around the site, especially dedicated to one task. A 6400 is a large machine -- many file-cabinet sized containers of components, all in its own separate air-conditioned room with a raised floor, in the grand tradition of mainframe computers everywhere -- but that part of the installation was dwarfed by the hardware it served: a two-story-high windowless room the size of a basketball court that was full of racks of electronics and heaps of equipment, but was dominated by the massive squarish bulk of two flight simulators for the Space Shuttle. The big CDC was being used to develop software for them.

The software development effort was running behind schedule, so there was a full crew of programmers and technicians hard at work, even on a weekend evening. I wearily set down several boxes of computer cards and a couple of thick binders of source-code listings, made the acquaintance of the system operator, and began eyeing the proceedings in the big room.

The crew was dedicated and working in a manner that showed it. Coffee cups and the remains of various items from fast food stores attested that it had been a long session with few breaks.

As a small concession to making the environment more pleasant, there was a portable radio. Its small tinny speaker had no chance of competing with all the fans and air conditioning in that large space, so someone had used it to weigh down the "push-to-talk" switch on the heavy base of the microphone for the room's public address system, and bent the goose-neck of the mike so that it was right next to the speaker. The resulting audio quality left much to be desired, but it was probably better than compressor pumps, and anyway, it was not clear that the rock music played by the local station could have benefited from better handling.

My curiosity about the simulators was sufficiently evident that before long, someone encouraged me to have a look for myself. So, with my hands carefully clasped behind my back, moving slowly and staying politely out of the way, I wandered out on the floor.

Many of you have no doubt seen pictures of the fancy flight simulators that the astronauts train in -- all sleek, shiny and polished, with motions in six degrees of freedom, full out-the-window visuals, and every color and detail precisely matching the real thing. These units were not of such elegant pedigree. They were slab-sided stationary blocks, stuffed full of cables and instruments, looming larger and clumsier than the flight-deck mockups they enclosed.

One of them was the display for the software under test. A few steel stairs led to the opening at the back. I climbed up and went in.

The interior of the mockup would have fooled no one into believing it real. The shape of the flight deck was there, but sculpted in sheets of battleship-gray plywood instead of metal. Many of the banks of switches and rows of instruments were only stenciled in white paint, and most of the switches that were actually installed were hardware-store style toggles instead of the precise electromechanical mechanisms with shields and guards that are standard on real aerospace machinery. The windows were blank -- just outlines on the wood.

On the other hand, the flight instruments and flight controls were all there, and appeared entirely functional. The video screens on the central part of the instrument panel, that displayed trajectory and guidance information in both text and pictures, were also present and operational.

The panel was remarkably familiar. There is a certain configuration of six flight instruments that has become something of a standard on American aircraft of all kinds. As a 1000-hour lightplane pilot who was fond of instrument flying, I was well acquainted with this specific arrangement of the "basic six", and has the particular geometry well engraved into my habit patterns of instrument scan and aircraft operation. The equipment here was all first-rate; for example, the gyros were of a kind that would display properly and not "tumble" in all flight attitudes. Furthermore, some of the dials had numbers on them that were many times larger than the ones I was used to seeing. Nevertheless, the basic configuration and function would have made even a beginning pilot feel comfortable and at home.

A few items were unfamiliar. There was a little dial labeled "Mach" off to the left of the main group, with numbers that went from 0.2 to something over 20. "Mach" is the ratio of airspeed to the local speed of sound, and Mach 20 is

something like 80 percent of orbital speed.

The electronics were totally new and utterly incredible. A TV-sized monitor to the right of the "basic six" gave a two-dimensional view of the ascent trajectory, scaled appropriately for the moment, with one cursor that showed where the Shuttle was and another showing where it would be several tens of seconds in the future if the present flight attitude did not change. Other portions of the display provided other data and clues. Precision instrument navigation in conventional aircraft has been compared to steering a car by cutting a hole in the floorboards and trying to follow the white line; this setup gave information equivalent to the perspective view out the window, all the way down the road (though that is not what the display looked like). It was very obvious what all this stuff was for, and equally obvious how to use it. I was impressed.

The software under test had to do with ascent to orbit and with the kind of abort that involves returning to the launch site. Evidently, the software driving the Shuttle autopilot was working well. It was being used to "fly" the Shuttle in the simulated environment of measurements from instruments and sensors, that was provided by other software, and it was that latter software that was being tested. The Shuttle's simulated pilot was being used to determine whether the simulated atmosphere and simulated aerodynamics were correct and functional. I stood in the mockup, leaning over the shoulder of the invisible electronic astronaut who occupied the pilot's seat, and spent several hours watching example after example of how to do it right.

My session on the 6400 was scheduled to begin at ten PM. As the time drew nigh, a slightly frazzled technician approached me with difference.

"Doctor Freeman," he said apologetically, "we're having real trouble debugging this piece of code. Is there any chance we could have an hour of your time?"

It wasn't "Doctor Freeman" yet, but I wasn't going to tell him that. I did my best to look as though I were trying to bear up cheerfully and stoically in the fact of a great and unanticipated sacrifice, and said "Sure." Then I went back to watching the Shuttle fly.

The requested hour dragged into two. I was carefully present, but carefully did not say anything at all to suggest that I was bothered by the delay. A perfect, model gentleman. As the hands of the clock advanced toward the witching hour, the same technician reappeared, announced that the problem was fixed, and thanked me profusely.

"Glad to help out," I said with a scrupulously correct smile.

"I notice you're interested," said the technician. "Would you like to try to fly it?"

I could be persuaded.

TO BE CONTINUED NEXT MONTH.

ASTRO ADS

FOR SALE: Odyssey One (13.1") tube and cradle assembly WITHOUT OPTICS. \$150 or best offer. Contact Tom Ahl, 408-268-3927.

TELEVUE EYEPIECES: 17mm, 10.4mm Plossls, \$65 each. Also, 15mm Widefield, unused, \$95. Contact Steve Gottlieb, 415-524-4678.

Marketing Manager-

Key position with corporate responsibility for developing and implementing direct mail, catalog, and media marketing plan for America's #1 Telescope Dealer.

This position requires a highly organized, disciplined individual with good management skills, strong marketing background, ability to set and meet tight schedules.

Applicants must be knowledgeable in marketing response analysis, lists, media, copy, production, printing, and art.

Please respond by mail only, to:

Tim Gieseler, President & General Manager
Orion Telescope Center
P.O. Box 1158, Santa Cruz, CA 95061

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. The large meeting room has kitchen facilities and large slide projection screen. This is also the location for the SJAA's "Indoor Star Parties", informal sessions where members gather to share their astronomical interests. Whatever your interest, astrophotography, deep sky observation, telescope making, or just arm chair observing, you'll find a friendly atmosphere at all of our meetings.

The Red Cross building is located at 18011 Los Gatos-Saratoga Rd. From Hwy 17 take the Hwy 9 (Saratoga) exit and continue west up the Los Gatos-Saratoga road for about 1.5 miles. Turn right at Rose Ave. Then turn right immediately into the parking lot of the Red Cross building. Doors open at 7:45 PM, with General meetings beginning at 8 PM. General Meetings are held on the 4th saturday of each month.

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 it board meetings during this time as well as an introductory astronomy workshop that is conducted once a month. Indoor Star Parties are held at the Los Gatos Red Cross Building.

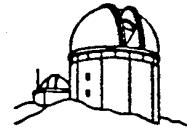
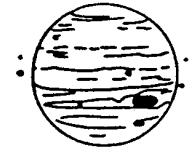
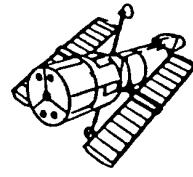
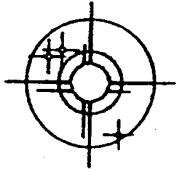
HENRY COE STATE PARK

Take Hwy 101 south towards Morgan Hill and take the East Dunne exit. Continue east towards the hills (around and past Anderson Reservoir) for about 12 miles to the park. Past the park entrance you will see old ranch type buildings on the right and a horse trough. The gate (on the left) is locked but the club combination is 4565. Always lock the gate after yourself. If arriving after dark, please park outside the gate and hike in first to find an observing site before dark, please. Just a short distance up a hill beyond the gate is where the SJAA sets up equipment.

FREMONT PEAK STATE PARK

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 into the park. The SJAA sets up in Coulter Camp. It's visible on your right as you drive up onto the main area of the park. There is usually a lot of astronomical activity here every clear new moon weekend. This is also the location of the FPOA's public observatory. Fremont Peak stands 3000 ft above sea level. Arrive early if you are setting up equipment. 30 to 40 telescopes are not uncommon at Fremont Peak.

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*	Contributors are welcome to submit articles for publication. These should be typed and submitted no later than the 12th of the previous 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 _____

Questionnaire (optional)

Address _____

Telephone (____) _____

What are your astronomical interests (e.g. astrophotography, deep-sky observation, telescope making, etc.)? _____

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

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

[Phone: (408) 262-1457]

Please check type of membership and if new
or renewal.

Membership Only _____ Membership/S&T _____
Junior (Under 18) _____
New _____ Renewal _____

Do you own a telescope? _____ If so, what kind?

Is there any specific area of astronomy that you feel
qualified to help others with? _____

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