SJAA EPHEMERIS

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Drift Method of Polar Alignment

How many beginners and less experienced amatuers know how to do a good polar alignment? I don't! I usually ask one of the more experienced SJAA guys or gals which way I must rotate my mount - East or West - to compensate for the drift I have. As every one knows correct polar alignment is required for astrophotography. Reprinted here are instructions given by Chuck Vaughn when he talked to the group on photography last summer.

1) Set up the telescope as normal. To save time later try to level the mount as accurately as possible. Use one of the many methods to roughly align using Polaris. This can be as rough as just getting Polaris in the center of your finder scope. The closer the telescope is polar aligned in the beginning, the shorter the time will be spent drifting. (Hint leveling the tripod will reduce time in correcting altitude error.)

2) Place a diagonal and illuminated guiding eyepiece in the guiding scope. About 200 power is the minimum required fore adequate sensitivity during drifting. Rotate the eyepiece so that a star moves parallel to the cross hairs in Dec and RA when using the slow motion controls. Align the cross hairs so that Dec is up and down (North and South) and RA is right and left (East and West).

3) Find a star very near the meridian and equator (0° Dec) and align it to the center of the guiding eyepiece. Let your scope track (If desired, guide only in RA) and observe for Dec drift (up or down). Unless the alignment is very close, drift in Dec will be seen in 5 to 30 seconds.

December 7: Star party at Grant Ranch with Halls Valley Group.

December 13: (Friday) Public star party at Branham Lane Park.

December 14: GEMINIDS peak this morning. 8:00 P.M. General Meeting at Los Gatos Red Cross building. Ernie Piini Talk (Don't miss him) Board of Directors meet at 6:30 pm preceeding the program

December 21: No activity. Partial (9%) Lunar Eclipse 2:33 a.m. PST

December 25: Open Astronomy gifts early in morning

December 28: Star party at Fremont Peak State Park

January 4: Star party at Grant Ranch with Halls Valley Group. Annular Solar Eclipse - Southern California

January 10: Public star party at Branham Lane Park

January 11 8:00 P.M. General Meeting at Milpitas Library. Board of Directors meet at 6:30 pm preceeding the program

4) When the star drifts up, turn the azimuth adjusting knob that makes the star move right in the field. If the star drifts down, adjust the azimuth knob that makes the star move left in the field. After adjustment, use the slow motion controls to center the star. Repeat this until there is no drift for at least 5 minutes. NOTE: if drift is observed in less than 5 seconds at 200X, the alignment is probably 10 or more eyepiece fields off in azimuth. Give the adjustment a good crank. This may have to be repeated 3 or 4 times to notice the drift slowing. When the drift is not observed for 30 seconds or so, the alignment may be 1 or 2 eyepiece fields off. Make the azimuth adjustment accordingly. After the star drifts in the opposite direction the adjustment has gone too far.

5) Find a star on the equator and within 15° of the Eastern horizon. Repeat 2) and use the guidelines from 3) and 4). When the star drifts up, adjust the elevation to move the star down. If the star drifts down, adjust the elevation to move the star up. Repeat this until there is no drift for at least 5 minutes.

6) When there has been a large correction in elevation (several degrees or more), check the azimuth again, otherwise the task is completed. With practice, it should be possible to complete the procedure before the end of twilight. Practice it in the back yard until you are confident.

------Chuck Vaughn

NOTICE: Watch for meeting location to change in January to the MILPITAS LIBRARY off of Calaveras Blvd. near the 680 Highway in Milpitas. To get there take 237 off 880 towards the mountains. It is behind the Milpitas Civic Center

Life Out There

At least once each Branham Lane Star Party, someone asks the question, "Do you think/believe there are other planets with life on them?" I answer, "Undoubtedly." If they ask about Intelligent Life my answer is, "So far there is no evidence of intelligent life anywhere in the universe", then I let them try to figure that out.

If time allows, I try to explain to them what would be necessary for the conditions for "Life - as - we - know - it" to come about.

Our galaxy, The Milky Way, is comprised of approximately 200 billion stars of various sizes (mass and volume). These stars are categorized mainly by their temperature and luminosity, which can be derived by the spectrum of light emitted by each of them.

Stars fall into different classes dependent upon their color, which is a factor of its temperature, and with its absolute brightness. Each star has a particular place on a chart that is called the Hertsprung-Russell Diagram. The classification of stars range from the hottest to the coolest, labeled O, B, A, F, G, K and M (N, S) (Oh Be A Fun Girl/Guy, Kiss Me (Now, Smack)). Seventy percent of the stars in our galaxy are of the "M" or cooler type. Our sun and other "G" type stars comprise about four percent.

The temperature/color is primarily controlled by one important characteristic, the amount of mass that makes up the star. The larger the mass, the hotter the temperature and thus the brighter the star will be.

For basics, a star "works" by converting hydrogen into helium through a process called Nuclear Fusion. This will produce, among other things, heat and light. The light given off can tell us many different facts about the star from its spectrum. The most important fact we are concerned with is its' temperature.

The more massive a star is, the hotter it is (and brighter too). Also, the more massive it is, the faster the star will consume the hydrogen of which it is composed. The main portion of a star's life is spent in hydrogen-fusion process which is called its' Main Sequence Stage (designated by a "V"). In this stage a star is relatively stable, and, if conditions are correct, where planets with life forms may be found.

As mentioned earlier, the more massive a star is the faster it will consume it's supply of hydrogen. A star like our sun will remain on the Main Sequence (hydrogen-to-helium fusion) for approximately 10 billion years. As the mass of a star increases, its' time on the Main Sequence decreases.

Another factor is that not all stars are born at the same time. Since our galaxy is approximately 10-12 billion years old, there is a wide time span within which stars could come into existence. The earliest stars born in our galaxy were poor in metals (heavier than helium). These early stars were generally "O's" and "B's" which, when they died, did so in grand style -Supernova- producing the heavy elements form which later stars were formed.

Since our planet Earth is the only example we have for life conditions, we will use it as our "yard stick". Our star is approximately 4.5 billion years old and we know that life moved out of the ocean onto land about two billion years ago with Homo-Sapiens appearing about 1.5 million years ago.

Using this example, a star must be on the Main Sequence at least 2.5-3 billion years for any form of life to appear. This first criteria knocks out the O, B, and A type stars, as their life spans are too short on the Main Sequence. Plus, when they move off the M/S, they do so rapidly by going supernova taking any attendant planets with them.

As we know it, one of the prime requirements is that water must be a liquid. Thus the average temperature on a planet with a breathable atmosphere must be between 32°F and 212°F (preferably nearer 32°F). In order to achieve this range, a planet must be in a relatively stable orbit around a single star, not too close and not too far. This distance for liquid water is called the "ECO-ZONE". Double or Multiple star-systems would normally be ruled out because their companion stars are too close together to allow a stable orbit for planets within this zone.

As the mass of a star decreases, this zone will move closer to the star and will become narrower, thus requiring more stability in the orbit of the planet. There is a point in this proximity where the gravitational attraction of the star becomes strong enough to halt the rotation of the planet (similar to the Earth-Moon system), thus forever baking one side and freezing the other. This eliminates the class M and cooler stars.

Now we have narrowed the search for possible targets to F, G and K type main sequence stars.

If a star has a companion or two, then, how close together can they be before the stability of possible planetary orbits is called into question? Second, what type of companion star do we have? If the companion is an O, B, or A type star then the chances are the star will supernova before any life could develop on a planet around our target star.

Alpha Centauri is a triple star system with component "C" (a small M type) too far away to be concerned with, but component "A" (a G2V like our sun) and "B" are separated by as much as 35 AU's (35 times the Earth's distance to the Sun) to as close as 11 AU's (from the Sun to Saturn). It would be possible for four planets each to orbit both "A" and "B" without interference (no more than approximately 2 AU's). Alpha "A" is thought to be approximately one billion years older than our Sun. What would an extra billion years of evolution mean to a species?

Within 100 light-years (lr) of our solar system there are approximately 2117 stars. These stars range from type O down to type M, super giants to dwarfs, stable and variable, and single and multiple systems. There are probably many others within this sphere that would

be considered stars but they would be cooler than type M (brown dwarf or "failed" stars).

Looking at just the F2 to the M2 type Main Sequence stars within this sphere we would find 981 candidates. Eliminating the multiple star systems, there are 702 stars to consider as possible planetary havens for carbon-based life forms to develop.

Within this 100 ly radius there can be found 38 G2V ("V" is the symbol for a Main Sequence star) star systems, 22 of which are single star systems identical to our sun, Old Sol.

As stated before, our galaxy has approximately 100 to 200 billion stars within a disk 100,00 light-years across. If there are 22 stars just like ours (G2V) within 100 ly of us, how many would there be in our galaxy? (4% times 200,000,000,000 or 8,000,000,000 G2V type stars)

The last thing to consider when asking about not only, "intelligent life", but a "technological civilization" is whether they will survive their entrance into and through the nuclear development stage and the time it takes to become aware of their fragile ecological environment before they irreversibly destroy themselves. We aren't out of the "woods" ourselves yet!

One last question: "If there are any advanced interstellar civilizations out there, why haven't they contacted us?"

My response is: "Why would they want to?"

——— Tom Ah

Board Meeting Minutes Gleanings

Enclosed herein are several interesting items from the October Board Meeting.

———————— ED

Grant Ranch Observatory

— Del Johnson

Last Tuesday, Eathan Cliffton toured Grant Ranch and Halley Hill, the potential site, along with park personnel, Halls Valley Group, etc. Mr. Cliffton offerd to design a professional dome for the site, but intends it to be a "Generic" dome that could be built by individuals on various sites. The design would be donated to SJAA. He wants a "Wish List" of tasks and equipment we would need. There is a series of design reviews planned. Since Mr. Cliffton is an architect and designed other domes, specifically the Keck dome, this is of great value. I will be at the Ranch during November star parties and have invited everybody to carry telescopes up to observe on Halley hill.

According to Ron Bricmont, and through other discussions there eventually will be provisions to drive up and unload equipment; 4 or 5 parking spaces are planned. Ranger Rick Morales, of Fremont Peak State Park, has offered to discuss astronomy and astronomical-goings-on with whomever from the county who needs to be assured this is a desirable use of the Park, that astronomers are not noisy/disruptive/destructive.

Jack Zeiders asked for a presentation from Mr. Cliffton, which will be scheduled in 1992. [If any one is interested in becoming involved and wishes to help contact Del Johnson - telephone number is on page 5. Don't let your active board members do every thing!]

Lawerance Livermore Labs Optical Experiment

— Steve Greenberg

LLL will be doing an experiment in adaptive optics where they will be aiming a large laser vertically to produce an artificial star high in the atmosphere, then image it to eliminate the effects of atmospheric turbulence. They need a number of observers in the suronding area. This sounds similar to a graze expedition. Jim Van Nuland offered to contact Tri-Valley people too. Walt Morgan is their graze leader. More specifics will be obtained. This technique is de-classified from star wars research and holds great promise.

General Meeting

— Speaker Dan DeVries

Dan discussed the activities of the Astronomical Society of the Pacific (ASP). ASP includes professional and amateur. Dan prefers "academic" astronomers rather than professional. "Amateurs" are those who are active observers, own telescopes, etc. Also welcome to ASP are "arm chair" astronomers, who are interested but not active observers. The word "amateur" (from French meaning lovers) was discussed and suggested they were "non-professional", "para-professional" and others. ASP publishes papers from amateurs and tries to bridge the gap between the academic and amateur community.

ASP sells astronomical material, especially educational material, including posters and slides. They are also working on material for classes that can be taken by teachers and lesson plans that teachers can take into their classrooms. Jim Van Nuland gave a desperate plea for an outline of a one to two hour talk that a teacher could use in the classroom.

The audience offered numerous amateur activities that are important scientific efforts; ALPO, AAVSO, IOTA, etc. Also, astronomy is the only science in which there are amateurs, and that many historic people were amateurs; Herschel, Lowell, goodness knows how many.

[There are many good talks presented at the General Meeting, for example, Ernie Piini's talk on his Solar Eclipse trips, Dr. Sussman, Dan DeVries and many more]

ASTRO ADS

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NO LATER THAN THE 15TH OF EACH MONTH! Your Astro Ad will run approximately 3-months.

TELE VUE Eyepieces for sale. 26mm, 17mm, 10.5mm Plossl, $50 each. 7.4mm Plossl (has a few nicks in the barrel),

$45. Celestron 26mm Plossl, $40. Pier and legs for Meade DS-16 equatorial mount, $100. Bill Cooke, 408-295-6560 10/91

CELESTRON 14 complete with fork, drive base, drive corrector, 2-inch diagonal, counter weights. With heavy steel pedestal, three legs, plus wedge. Excellent condition with excellent optics. $7800 takes it! (no eyepieces). You pick up! Contact: John Gleason 415-7928248 10/91

CELESTRON 8 w/Starbright coatings, 1.25" visual back, 1.25" mirror star diagonal, 26mm Plossl eyepiece, 7mm Ortho eyepiece, Orion T-adapter for Minolta Camera, piggyback camera mount, 8X50 Polaris finger scope, foot locker style case, and tripod and wedge. Five years old and well maintained, $900 or best offer. Tripod requires minor repair work. Paul Meyer, 408-370-3887 or 408-456-6253. 9/91

ASTRO PHYSICS Star 12ED refractor complete. Pictured in July '91 pg. 93 of Astronomy. With pulse drives instead of skysensor. In addition, included is 8X50 finder with quick release bracket, Motofocus and tube case. All mint condition. Unbelievably great performer! Only 6 months old. will sell only at purchase price. (slightly above $3,300) Now you don't have to wait 6-12 months to get it from the factory. Three Orthoscopic eyepieces by Aus Jena, 25mm, 16mm, 10mm. Call after 7 PM. Edward Hillyer 209-931-0846. 9/91

ULTRA FINDER A unique 5" f/5 refractor, Jeagers cemented Achromat in a cell, aluminum tube, mounted for 1/4-20 bolts, rack and pinion 2" focuser, dew cap, lens cover, 2" dia. 55mm Plossl (12X) and huge surplus 2" dia. eyepiece (7X @ 2-1/2° field). Has 2-3/4 times the light gathering power of Celestron,Lumicon or Orion 3" Super Finders. Solar Eclipses, the Moon, open clusters and nebulae are spectacular through this optics. Best offer over $550. (Steve is flexible, but since there are $650 worth of parts in here, he doesn't want to take a bath) Steve Greenberg 209-239-2154 (home) or 415-423-4899 (work). 11/91

Celestial Calendar

Lunar Phases	Date	Rise	Tran	Set
NM 19:56hr	05-12	0759	1232	1701
FQ 01:32hr	14-12	1205	1824	0036
FM 02:23hr	21-12	1653	0020	0746
LQ 17:55hr	27-12	0109	0633	1156
Nearer Planets				
Mercury	07-12	0721	1210	1655
0.74 A.U.	17-12	0540	1051	1558
Mag - 0.0	27-12	0515	1021	1524
Venus	07-12	0328	0900	1430
1.01 A.U.	17-12	0348	0908	1425
Mag - 4.1	27-12	0407	0916	1421
Mars	07-12	0636	1121	1603
2.46 A.U.	17-12	0631	1111	1547
Mag + 1.4	27-12	0625	1101	1543
Jupiter	07-12	2321	0549	1216
5.12 A.U.	17-12	2245	0512	1138
Mag - 2.2	27-12	2207	0434	1059
Saturn	07-12	1018	1509	1956
10.6 A.U.	17-12	0942	1434	1922
Mag + 0.7	27-12	0905	1359	1847
SOL Star Type G2V	Mag - 26.72			
1657 - 2230 ...	07-12	0713	1155	1633
1737 - 2318 ...	17-12	0718	1156	1631
1818 - 2318 ...	27-12	0719	1157	1632

Astronomical Twilight

JD 2,448,598.5	07-12	0531	-	1814
608.5	17-12	0535	-	1813
618.5	27-12	0536	-	1814

Sidereal Time

Transit Right	07-12 0000	PST = 0455
Ascention at	17-12 0000	PST = 0534
Local Midnight	27-12 0000	PST = 0614

Darkest Saturday Night	DEC 07
Sunset	1633
Twilight End	1814
Moon Set	1748

TIMES & DATES ARE PACIFIC STANDARD

by Richard Stanton

COATED TRIPLET OBJECTIVE LENS f5.6, 40"fl, designed by Dr. James Baker of Harvard Observatory. Dimensioned plans for cell (optional pair of focal length reducer lenses included if you wish an effective back focal length of about 14"). Dr. Baker considered this to be one of his two best color-corrected designs manufactured. Photographic quality and will easily cover a 9" by 9" plate. A few minor scratches on the front element that do not interfere with optical quality. Two minor edge chips (covered by spacer ring) on the rear focal reducer lenses. Best offer around $600. Steve Greenberg 209-239-2154 (home) or 415-423-4899 (work). 11/91

Joe Perry, a former member of the SJAA, announces the availibility of CCD images as shareware. The images are on IBM - formatted 5.25 floppies and 3.5 discs (DD and HD). The files are *.PCX or *.TIF formats and have been squeezed by LHARC. Asking $2 per disc and wants you to write for full inventory of available files. He is also promoting subscription to the CCD News, a periodical, at $6 per year. Joe can be reached at 2610 Belcastro St, Las Vegas, NV, 89117 Tel - 702-368-1884 12/91

PERSONAL: Traveling companion SWF 30-50 wanted for Spring 92, 3 month sabbitica,l trip to Europe with photo Prof. Visiting observatories and cultural attractions in Spain, France, Italy, Greece, Hungary, Austria, Czech., Germany, Holland, England. Will pay major expences. Call, write or fax to John Sandford, (417) 722-7900; 2195 Raleigh Ave. Costa Mesa, CA. 92627 11/91

NEW and expanded catalog of Astronomy Materials available from the ASP

ASP
Catalog Request Dept.
390 Ashton Ave.
San Francisco, CA 94112

There is some neat video material here.

COSMOCON 91 A unique Astronomy Convention in the San Francisco bay Area !! This is a joint convention hosted by the Astronomical Association of Northern California celebrating the excitement, wonder, and spirit of discovery in Astronomy. Co-hosted by San Jose State University

July 13 --- 18, 1992

For registration packet and further information about the convention, write

to:
COSMOCON 92
Krebs Convention Management Services
Pioneer Square, Suite 200
555 De Haro St.
San Francisco, Ca 94107-2348
(415) 255-1279

Comet Comments

Don Machholtz

Three new coments have been discovered lately. Meanwhile, periodic Comet Hartly remains brighter than expected, and comet 1991d, discovered early this year, is in our morning sky.

Periodic Comet McNaught-Hughes (1991y): Robert McNaught reported his discovery of a comet on a plate taken by S. Hughes. We now know that this comet is periodic, orbiting the sun every 6.7 years. It was closest the sun last June at 2.12 AU and remains fainter than fifteenth magnatude.

Periodic Comet Shoemaker-Levey 5 (1991z): Carol and Eugene Shoemaker and David Levey picked up this comet on plates exposed October 2. They were Using the 18" Schmidt at Mt. Palomar. Then at magnatude16, the comet will not get brighter even though it is approaching perihelion (Dec. 1 at 1.98 AU) in its 8.6 year orbit.

Comet Shoemaker-Levy (1991a): The same team also discovered this comet four days later. It will be closest to the sun next July at 0.8 AU and should be visible then in binoculars in the northern summer sky.

EPHEMERIDES

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
			PERIODIC COMET HARTLEY 2 (1991t)				
11-25	10h38.1m	-02°33'	10h40.6m	-02°48'	80°	M	9.9
11-30	10h43.7m	-03°40'	10h46.2m	-03°56'	83°	M	10.1
12-05	10h48.4m	-04°42'	10h50.9m	-04°58'	87°	M	10.2
12-10	10h52.1m	-05°38'	10h54.7m	-05°54'	90°	M	10.3
12-15	10h54.9m	-06°27'	10h57.4m	-06°44'	94°	M	10.5
12-20	10h56.7m	-07°11'	10h59.2m	-07°27'	99°	M	10.6
12-25	10h57.4m	-07°47'	10h59.9m	-08°04'	103°	M	10.7
12-30	10h57.1m	-08°17'	10h59.6m	-08°33'	108°	M	10.8
01-04	10h55.4m	-08°38'	10h58.3m	-08°54'	113°	M	10.9
			PERIODIC COMET FAYE (1991n)				
11-25	01h57.6m	+00°56'	02h00.2m	+01°10'	145°	E	10.2
11-30	02h01.5m	+00°39'	02h04.0m	+00°54'	141°	E	10.3
12-05	02h06.0m	+00°34'	02h08.6m	+00°48'	137°	E	10.4
12-10	02h11.2m	+00°38'	02h13.8m	+00°52'	133°	E	10.5
12-15	02h17.0m	+00°52'	02h19.6m	+01°06'	129°	E	10.7
12-20	02h23.4m	+01°14'	02h25.9m	+01°27'	126°	E	10.8
12-25	02h30.3m	+01°42'	02h32.8m	+01°56'	123°	E	11.0
12-30	02h37.6m	+02°17'	02h40.2m	+02°30'	120°	E	11.1
01-04	02h45.5m	+02°56'	02h48.1m	+03°08'	117°	E	11.3
			COMET SHOEMAKER-LEVY (1991d)				
11-25	14h30.7m	+36°41'	14h32.7m	+36°28'	61°	M	11.2
11-30	14h48.0m	+37°10'	14h50.0m	+36°58'	62°	M	11.1
12-05	15h05.7m	+37°38'	15h07.6m	+37°27'	64°	M	11.1
12-10	15h23.2m	+38°05'	15h25.7m	+37°54'	65°	M	11.1
12-15	15h42.3m	+38°29'	15h44.1m	+38°20'	66°	M	11.0
12-20	16h00.9m	+38°51'	16h02.7m	+38°42'	67°	M	11.0
12-25	16h19.6m	+39°10'	16h21.4m	+39°02'	68°	M	11.0
12-30	16h38.3m	+39°25'	16h40.0m	+39°20'	68°	M	11.0
01-04	16h56.8m	+39°36'	16h58.5m	+39°34'	68°	M	11.0

Don Machholz (916) 346-8963

Grant Ranch Observatory Update

---- Del Johnson

The SJAA's most primary function is the education of the public in science and joys of astronomy. To this end, we presently offer monthly public observing nights at San Jose city park, Branham Lane, indoor astronomy classes at no charge, and monthly observing sessions (as a follow-up to the class) at Joseph Grant County Park. SJAA is also associated with the Fremont Peak Observatory Association, located within Fremont

Peak State Park, and utilize their 30" telescope and park for both advanced observing as well as periodic over nighters.

Within SJAA's objectives there is a defined progression from initial viewing at the city park, to classes and observing sessions, and on to advanced observing. There is an area in these activities which SJAA and the Joseph Grant Ranch county Park, can fill. At the present time we need to furnish hands-on experience with an intermediate size telescope. To that end SJAA has an 11" telescope which is fully computerized. We could provide the shelter, instrument and staff to operate the telescope on weekends and holidays for the general public. SJAA would provide solar observing capability, conduct presentations and classes on-site using existing amphitheaters and buildings. The site to be used will be Halley Hill, a nob 200 feet above the valley floor. This effort is intended to compliment the ongoing efforts of the park and will be in addition to "telescope Row" area, which we will continue to support.

This is a significant commitment on the Park and SJAA now that Lick Observatory has eliminated it's public viewing nights.

The site is sheltered from general campground lights, has power and water 300 feet away and has a particularity good view of the southern and eastern skies. It is close enough to San Jose for mid-week use. The 11" allows for serious work while being available for public viewing on weekends and full support for our "Intro to Astronomy" course.

Within the last two months I have attended two meetings of the citizens committee which the role of astronomers as support to the park and solicited support from the committee and other interested parties. To demonstrate the compatibility between campers and astronomers, I have placed a small telescope on Halley Hill on four occasions and assessed camper's response. On the first night 26 campers showed up. On the second night, over fifty came to look through two telescopes. Not a single negative comment was received by the park staff.

Work will continue with the County. We now must begin to design the observatory with the help of Mr. Ethan Clifton, designer of the Keck dome. We currently have two volunteers, but need more. This is an important project for SJAA. Lets get behind it with additional help. please contact me, Del Johnson, at (408) 448-0293.

Solar Telescope Contributors

Jack Zeiders
Jack Peterson
Duncan Munro
Tom Ahl
Del Johnson
Rich Newsheaffer
Dave Enos
Ron a Branham Lane Guest
Jack Freidman
Dean Linebarger
Byron Wittline
John McCollum
Bob Ashford
Bob Keller
Steve Greenberg
Jim Van Nuland
Paul Barton
Ernie Piini
Bob Madden

Editor's Corner

The December Speaker will be Ernie Piini talking about his experiences during the Great Solar Eclipse of 1991. Ernie is a noted eclipse chaser traveling to the far reaches of the world to wittness this great celestial event. He has designed and made his own telescope. come to listen to him in December. His talk will be the last night we are at the Los Gatos Red Cross building.

The January speaker will be Mr. Ethan Cliffton, who will discuss the design of observatories. Mr. Clifton is the designer of the great Keck telescope dome on Mauna Kea, Hawaii. This will also be an important meeting as many ideas regarding our own observatory at Grant Ranch County Park may jell.

November's meeting heard Pat Donnelly talk about multiple star systems and how to observe them. A very good talk.

We continue to need more interesting speakers. Please contact Jack Zeiders if you have any contacts.

Happy Holidays

SPECIAL NOTICE

THERE WILL BE A GENERAL MEETING

SITE CHANGE BEGINING IN JANUARY 1992

THE LOCATION WILL BE AT THE MILPITAS LIBRARY

JUST OFF CALAVERAS BOULEVARD

BEHIND THE MILPITAS CIVIC CENTER.

TO GET THERE FROM 880 (17) HEADING SOUTH/NORTH HEAD EAST ON 237 (CALAVERAS BLVD.) OVER THE RAILROAD OVERPASS. THE CIVIC CENTER WILL BE ON THE LEFT SIDE WHERE YOU WILL TURN. JUST AFTER THE POILCE STATION AT THE NEXT ENTRANCE WILL BE THE LIBRARY.

TO GET THERE FROM 680 HEADING SOUTH/NORTH HEAD WEST ON CALAVERAS BLVD. THE CIVIC CENTER WILL BE ON THE RIGHT SIDE WHERE YOU WILL TURN. JUST AFTER THE POILCE STATION AT THE NEXT ENTRANCE WILL BE THE LIBRARY.

WATCH FOR MORE IN THE NEXT EPHEMERIS

EPHEMERIS is published monthly by the San Jose Astronomical Association - 3509 Calico Ave., San Jose California 95124. Members are encouraged 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 to the editor, Bob Madden, 1616 Inglis Lane, San Jose, California 95118

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San Jose Astronomical Association
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