SJAA EPHEMERIS

VOLUME 4 NUMBER 1 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION JANUARY, 1993

The EyePiece
By Bob Madden

Del Johnson has resigned from active participation on the SJAA Board of Directors. Del states that he will be moving to the State of Washington until next spring when he will receive his assignment in the Peace Corps. We wish Del success and thank him for his dedicated services on the board and to the membership. Del has been the primary leader in our observatory project and has developed a repport with the park planning commission. He has seen that we won't offend the Park Commission and build a facility that they and we will be proud to have the public use.

On the subject of the Observatory, Del reports that he has read the Environmental Impact Report (EIR) and Master Plan thoroughly and has made comments to the appropriate authority. By the time you read this the public hearing on the documents will have been held (Dec. 2). That is when the rubber hits the road and we will need your support. Don't let the regulars do it for you; pitch in and help. Lets not let all the good work Del has done go for naught.

If you didn't make the November general meeting you missed Kevin Medlock and Vance Chin show their CCD and remote telescope control work. Vance does the electronic and software and Kevin does the mechanical and optical (telescope) work. We were shown many images taken over three years in places like Chabot (very much light polluted), Riverside and Sonoma State College. They are mind blowing! With them was a young student from Sonoma State college who has been doing some research work with a 20" supplied by Vance and Kevin. She has been seeing to magnitude 16! Very impressive! Kevin said any one can build one if he so desires. Contact Kevin at Epoch Instruments for further information. I would like to see Vance and Kevin write a book on their work and have it published for Amateur Telescope Makers.

Jan 2: No activity.
Jan 9: General Meeting, 8:00 pm. Board of Directors meeting 6:30 pm. Dr. Roger Romani from Stanford is again scheduled to speak to us on Black Holes and new objects in our Galaxy.
Jan 16: Star Party at Henry Coe SP. Sset 5:14 pm. 29% moon.
Jan 23: Star Party at Fremont Peak and Grant Ranch. Sset 5:22 pm. 2% moon. Mset 6:38 pm.
Jan 29: Star party at Houge Park. Sset 5:29 pm. 42% moon. Mset 0:20 am.
Jan 30: The first of the year Beginning Astronomy Class at the Milpitas Library starts at 8:00 pm.
Feb 6: General Meeting, 8:00 pm. Board of Directors meeting 6:30 pm. Dr. Garry Weston of the department of Physics, Cal. State Hayward, will discuss Gamma Ray bursters
Feb 13: Star Party at Henry Coe SP. Mrise 12:39 pm. Waxing Gibbous 10 d old. Astronomical dark 7:13 pm.
Feb 20: Star Party at Fremont Peak and Grant Ranch. Sset 5:22 pm. Mrise 9:10 18d old.
Feb 26: Star party at Houge Park. Sset 5:58 pm. Mrise 2:25 am
Feb 27: Beginning Astronomy Class at the Milpitas Library starts at 8:00 pm.

SPECIAL NOTICE

The ***Observer's Handbook 1993*** published by the Royal Astronomical Society Of Canada is now available through Jack Peterson, the Association Treasurer. Contact him at the general meeting or the Beginning Astronomy classes. Cost will be $10.

ELECTION NIGHT WILL BE 9 JAN. Be sure to come to the general meeting in Janurary to nominate and vote for your favorite Board member. Five positons are up for re-election. They are those held by:

Jack Zeiders
Jim Van Nuland
Paul Mancuso
Paul Barton
Steve Greenberg

Your Nominating Committee is:

Bob Braurer
Jack Peterson
Bob Madden

Contact them for your nomination or nominate from the floor at the Jan general meeting.

Bob Brauer Named to the Board
Bob Braurer and John Wright were nominated to fill the vacancy left by the resignation of Del Johnson. In situations as this the Board makes the appointment. Bob will fill the remaining term and then must stand re-election. John has been placed in nomination for the position of Board member in the Janurary elections. We would like to welcome Bob to the Board and thank Del Johnson for his service to SJAA.

Astromicroscopy and Astrophotomicrography

by Samuel D. Bissette

[I met Sam at the Arizona University Astronomy camp and while waiting for the clouds to clear, Sam gave his talk and showed some of his slides. His methods are interesting enough that I thought others might like to try. If you do, please let me know so we can show your results at a General Meeting; also we can let Sam know of your activity.]

Imagine the setting: a free evening during the dark of the moon with weather unfit for sky viewing. Settle comfortably in a darkened room and pull out an album page of color slides taken over the past few months of some interesting areas of the night sky. Put them on a light table and select several for projection on a wall screen.

The slides, which are wide-field 35-mm photos taken with a 50-mm camera lens, show the sky without magnification in bright color and in very sharp detail. Nebulae, double star systems, star clusters, and constellation groups show clearly. Now place the most interesting slide on the stage of a microscope, set the power on 50X, and systematically scan the slide strip by strip. Quickly seen are sky objects magnified at more than the prime focus of a 2000-mm f-10 telescope. A search for nonstellar fuzzy objects and faint light specks reveals a blur-green irregular speck that looks interesting. Increase the power to 200X and look again. When 500X is used, a bar-shaped object comes sharply into view. Connect the camera to the microscope adapter, focus the picture, and push the shutter release. After about 30 seconds, the camera meter signals enough exposure, the shutter closes, and the photo is taken.

Welcome to the world of observing and taking pictures through a microscope! It is a world full of startling revelations and a world free of weather problems, insects, light interference, air pollution, and other frustrations of night time viewing. Indeed, this method of recording the sky first photographically and then magnifying certain areas for observation and photography differs dramatically from conventional methods of magnifying first and then observing.

Chance played an important part in my interest in this method. As an artist who was finding conventional painting subject matter tiresome, I became interested in astronomy - a hobby - as a source of new painting material. One thing led to another, as I turned further to the microscopic field in my search for unique material. The chance viewing of a color astroslide under a microscope led to subsequent experimentation and the techniques outlined here. What follows, however, is a simple introduction to the subject. What clearly lies ahead is the challenge of learning and redefining the use of the microscope for astronomical observation.

Creating the Original Color Slides

The first part of this process consists of photographing a number of areas of the night sky over the four seasons, especially constellation areas. Required are: a 35-mm single lens reflect camera, ASA 400 Ektachrome film (pushed processed to ASA 800 when developed), filters, and a tracking telescope with accurate setting circles.

After the film is loaded, set the camera on bulb exposure and the aperture on f2, focus on infinity, attach a locking cable and release, mount a wide-band light pollution reduction filter of 52-mm (Orion Sky-Glow) and a minus-violet filter of 52-mm or larger (Lumicon), and a lens shade. Piggyback-mount the camera on a tracking telescope, which has been polar-aligned, and then, using bright star, set the setting circles and align the camera with the telescope. Sight the sky area to be photographed through the camera viewfinder and fine-tune the tracking for accuracy. Then take an 8-minute time exposure, or a 10-minute one if considerable nebulosity is anticipated. Guiding is not necessary.

An exposure journal should be kept for photo sessions. Record the information for each exposure by number, including the right ascension and declination coordinates. Take a number of areas of the sky at each photo session. Some cautions and hints for better pictures are: (1) take areas high in the sky to avoid horizon sky-glow, (2) stick to clear nights with good visibility, (3) achieve a vibration-free exposure, and (4) avoid dew on the lens.

When the film has been processed, examine the slides with an 8X loupe on a light table and enter the data from the log on each slide, especially the area and coordinates. If the task has been carried out carefully, the reward will be slides of pinpoint stars in their natural colors, glowing nebulae, a host of double stars, and identifiable Messier and NGC objects. The second part of the process now begins - observation and photography of the wide-field color slides.

Projection viewing

The slides should be projected on a screen of at least two by three feet. A white matte cardboard screen could be affixed to a wall; the back of a mattboard is also a good surface. Do not use a glass bead projection screen because of its grain. Examine the image close-up with a sky atlas at hand, using the right ascension and declination coordinates for orientation. Determine the areas worthy of microscopic examination. Then try to learn about the sky area represented by the image and look for objects readily identifiable and those that are not. The next step is astromicroscopy, a name chosen to describe the process of examining astro color slides visually through a microscope.

Visual Use of the Microscope

I use a microscope (Edmund Scientific) with 5X, 20X and 50X objectives and 10X and 20X eyepieces capable of magnifications of 50, 100, 200, 400, 500, and 1000X. It is equipped with a rotary aperture, a course and fine focuser and lock, an illuminator, and a camera adapter for microphotography. The spring clips should be removed and a color slide placed on the viewing stage. Adjust the light intensity with the aperture to eliminate any excess light halos, set for 50x, and focus. Propelling the slide gently with the fingers, start in one corner and view a strip to the opposite corner, then reverse, repeating this process until the entire slide is viewed. Notes of interesting objects and their approximate locations on the slide may be made. Or a photo can be taken as

Continued on page 3

Micro Astro-photography Continued

each object is found while it is in the eyepiece. To stabilize the slide, use the spring clips, but do not allow them to scratch the film surface. This viewing is very important, so look sharply and investigate each little mass, blur, or speck [be cautious of artifacts and guiding movement]. Use up to 500X to see objects in greater detail. The Messier list, or other guides to unusual sky objects, can be used to identify unusual objects on the slide. Since the slide is centered on the right ascension and declination coordinates identifying the slide, this will help in celestial orientation. Above all, enjoy the fun of searching for and viewing objects at magnification higher than usual telescopic ones. Embedded in the film emulsion is a wealth of faint astronomical information

Astrophotomicrography: Photos of Astroslides through a Microscope

I use a Nikon FE2 35-mm camera loaded with ASA 400 Ektachrome. The camera lens is removed and replaced by a T-ring, which then threads into the microscope adapter. The adapter in turn is mounted on the microscope barrel and tightened with set screws. The exposure dial should be set to automatic and a cable release attached. The next step is unusual and important. Set the film-speed indicator at ASA 50 and the exposure compensation at plus two stops, giving in total by this process the five stops of over-exposure needed to obtain a correct exposure through the microscope. This over-exposure is needed because the unusual backgrounds together with the light through the microscope fool the camera meter.

With the camera mounted on the microscope, focus through the camera carefully, lock the microscope focus, and then release the shutter. The camera does the rest, sometimes taking up to 40 seconds for the exposure. Bracketing of exposure may be done by one stop more or less by adjusting the film speed to either ASA 25 for more exposure or ASA 100 for less. This process works well for my microscope and camera combination. It may differ for other equipment, but the principles remain the same.

It is important that an exposure log be kept with identifying information on each frame so that slides can be identified after processing. Viewing the slides would be done in the same manner as projecting the original wide-field ones.

A slide duplicator may be used, not only for duplicates but also for magnifying areas of the original slides. To do this, use one (or even two) 2X teleconverters mounted between the camera and duplicator. Set the camera on automatic, but give seven stops of over-exposure by setting the ASA on 25 and the exposure compensation on plus two stops. Rotate the slide in the holder to expose various areas. Ektachrome 400 (pushed processed to 800) is needed for this procedure to allow for the extreme over-exposure.

Comments

Because of the variance in lightness of the backgrounds, I prefer to let the camera meter function rather than guess at time exposures. This requires a film fast enough to provide for the over-exposure adjustments but with a fine enough grain for satisfactory results. Other considerations, such as overall color balance and the availability of E-6 film processing, have led me to use Ektachrome ASA 400 as is, or push processed to ASA 800, depending on what procedure is being followed. If the grain in the slides becomes too pronounced, it may be eliminated by one or two stops of under-exposure. The usual color compensation filters, over- and under-exposure, and centering can be used with microscope slides.

Variations of the Process

A number of variations appear possible. Portions of the sky can be photographed with 200- to 800-mm lenses and then viewed under the microscope. Color print films with very fast speeds can be used to create material for astromicroscopy. Variations in film brands, speeds, and types are possible. Filtering methods on the wide-field slides also can be changed. Indeed, this entire process can be modified by any astronomer or astrophotographer interested in further innovation of wishing to conform the process to his or her circumstances.

Conclusions

This method is just one more process through which amateur astronomers can expand their knowledge of what lies in the night sky. As a different type of visual and photographic observation, it may produce unique results, as well as the fun of discovery and interpretation, supplemented by photography for record keeping. And unquestionably for amateur astronomers, astronomical observation under pleasant indoor conditions can be a welcome change from the many frustrations that often accompany nighttime outdoor star gazing.

S. D. Bissette
1939 S. Live Oak Pky
Wilmington, NC 28403

Paul's Asterism
by Paul Barton

At Fremont Peak for KTEH Paul was telling me about an asterism in Cassiopeia he was shown. I ask him to do a write-up. Here is his report . . . . . Ed.

At the October 16th girl scout star party, Paul Mancuso showed us an asterism in Cassiopeia that is very interesting. It is easy to find, probably not officially named, or numbered, and has the shape of a lobster, crawfish, airplane, eagle or E.T. Two bright stars could be the eyes of the lobster, or E.T., as you view from a position looking down on it.

To find this asterism start at Delta (∂) Cass., the bottom of the flat V of Cass (near M-103) go south about 3° and west 3/4° to Phi (Ø) Cass. Both can be seen in the finder at the same time. 5th magnitude Ø Cass. is one of the eyes of the E.T. man (if that is what you think the asterism looks like). This is a striking asterism near NGC 457,0119N58. The asterism is pointed (looking) at delta Cass.

[Now the challenge! How many of you will take the time to look for this asterism? If you do try, please call me at (408) 264-4488 and leave a message of your efforts: leave your name, day and time you looked, seeing conditions, your location, and your success or lack there of. . . . .Ed]

Star Parties

by Paul Barton

The weather man hasn't been too kind to us (star gazers) this month. But of course when you always stay home when the weather is marginal, you miss some good "shots". We often get a few nice "peeps" in spite of the weather man.

Independence High School

Thursday, Nov. 19, at Independence High School was a special event where NASA and educators were working on getting together . . . Flight Opportunities for Science Teacher Enrichment . . . Actual flights in a NASA C-141, the Kuiper Observatory, with a 36" telescope is planned. Bob Madden, Jim Van Nuland, Jack Peterson, and myself with Lady set up our telescopes and prepared for business. Our host, Edna Divore of NASA, introduced all around. Dr. David Koch, NASA - Ames/Foster project, explained their objectives. The weather man gave us mostly overcast skies, so after a couple of hours we abandoned ship and retreated to our various caves. [that is, we went home] In attendance:

Dr. David Koch	NASA Ames
Edna Divore	NASA
Jeff Ring	SJ High School
Childa Ruff	Helms Mid Sch, San Pablo
Jackie Ervin	JFK High School, Richmond
Gail Cuiad	Independence
And Son	High School
Bob Choate	William Sheppard Middle School
Vivian Huang	Skyline High School, Oakland
George O'Neil	Burnett Academy, SJ
Tony Mendoza	Indepence Grad at De Anza College

When I went to San Jose State College in the 30's it was smaller than Independence High School. A safari across this campus is a major under taking.

Henry Coe State Park

Saturday, Nov 21, dawned overcast; the weather forecast was gloomy. At 3:00 pm it looked gloomy, but there were a few breaks in the gloom, so, off we went to Henry Coe SP, arriving about 4:10. The weather looked hopeful, so we set-up the JMI-18. Then Lady and I shared a sandwich (no one else there yet). John and Angela Macchia, interested hikers, kept Lady and me company for a couple of hours. There were other occasional hikers who stopped for a moment.

About full dark Albert, Mark and Sho-Lo (father) Chen came with the Quantum 4 and Mike and Chuny-Lin Lee came with their 6" Newtonian. So we had three telescopes set-up. At first we could see a few stars and did observe a few objects - M-57, Saturn, Venus and Alberio - but the weather deteriorated rapidly, becoming solid overcast. At 8:00 pm there were a few rain drops, so we bailed out en masse.

This and other outings demonstrates that our astronomy class and telescope loaner program is bringing out new amateur sky gazers. Albert Chen (15) could quite possibly go on to much greater achievements (in astronomy?).

Information from Eye on the Sky BBS Regarding LLNL Guide Star Project

recovered by Bob Madden

VIEWED BY EYE @ 5KM.
7/31/92 Marien layer clouds: no shot.
8/12/92 Viewed by intinsified CCD through an 8 inch Celestron. Recorded images on VHS tape... Saw object blink when laser frequency spread was changed.
8/13/92 Several people took photographs @ 5KM. Looked through 10" telescope at the star. Planning an ATV link to LLNL 8/14/92.
8/14/92 Its hard to see through clouds. The file attached to this plan shows the laser lighting up the clouds. The ATV trial was good and will be improved for the week of 24th. Saw the star blink when the laser wavelength was changed. Saw slides from the 13th of the guide star. Seems to have lot of structure along the length of the star.
8/21/92 Planning meeting held to discuss the experiments we want to try this 8/26-28. Most will view the entire visable beam in order to estimate the scatter losses. We need to observe the polarization of the guide star itself. We mounted the Image intensified CCD to a 4" diameter 17" FL reflector telescope. It was able to see M13 and its companion 6th mag stars. We may have up to 4 low light level camera and telescope to use this next week...
8/26/92 Steady guide star all night. Only shut down to avoid satellites ATV between two Livermore sights and LLNL attempted. Each see one another using 1 Watt. We will be boosting to 40 Watt so LLNL can see us. Battery failures terminated the ATV. Attached is the digitized results from two CCD camera. Still working on ATV to MT D.. 4" OD 17" FL reflector with running average Microchannel intensified CCD was our best set up. Star seen 14 miles south with binocs. 11 miles more to Digger.
8/27/92 Digger pines not able to see beam. To many cloud and sky glow. ATV viewed direct from transmitter recorded the transmission and digitized some images. Ask to see them. Guide star visable at 32 Watts through 16 inch f 4.3 newtonian and underwater microchannel intensified CCD camera, offsight 3 KM from launch sight. Call Norman L Thomas for camera and scope details 422 0486...
8/28/92 High clouds lit up nicely. When clouds lit up the guide star fades out. @ the LLNL sight I viewed the Rayliegh scattered beam. It appears thicker than it's 4 inch width. ATV recorded the event and digitized the VHS tape. Beam can be seen to giggle north south from time to time.
9/10-11/92 Clouded out..
10/5/92 Data taken for ranging the LGS on Mt. Diablo and on Buena Vista. Report from 18 miles south that the beam was spotted via binocs between 3:40-3:50 AM
10/6/92 Fun with CCD's no serious data. We lacked time stamp.

What to look for:
Look for a minimum in the Rayleigh scatter at 5-10 KM up.

continued on page 5

Star Parties
by Paul Barton

The weather man hasn't been too kind to us (star gazers) this month. But of course when you always stay home when the weather is marginal, you miss some good "shots". We often get a few nice "peeps" in spite of the weather man.

Independence High School

Thursday, Nov. 19, at Independence High School was a special event where NASA and educators were working on getting together . . . Flight Opportunities for Science Teacher Enrichment . . . Actual flights in a NASA C-141, the Kuiper Observatory, with a 36" telescope is planned. Bob Madden, Jim Van Nuland, Jack Peterson, and myself with Lady set up our telescopes and prepared for business. Our host, Edna Divore of NASA, introduced all around. Dr. David Koch, NASA - Ames/Foster project, explained their objectives. The weather man gave us mostly overcast skies, so after a couple of hours we abandoned ship and retreated to our various caves. [that is, we went home] In attendance:

Dr. David Koch	NASA Ames
Edna Divore	NASA
Jeff Ring	SJ High School
Childa Ruff	Helms Mid Sch, San Pablo
Jackie Ervin	JFK High School, Richmond
Gail Cuiad	Independence
And Son	High School
Bob Choate	William Sheppard Middle School
Vivian Huang	Skyline High School, Oakland
George O'Neil	Burnett Academy, SJ
Tony Mendoza	Indepence Grad at De Anza College

When I went to San Jose State College in the 30's it was smaller than Independence High School. A safari across this campus is a major under taking.

Henry Coe State Park

Saturday, Nov 21, dawned overcast; the weather forecast was gloomy. At 3:00 pm it looked gloomy, but there were a few breaks in the gloom, so, off we went to Henry Coe SP, arriving about 4:10. The weather looked hopeful, so we set-up the JMI-18. Then Lady and I shared a sandwich (no one else there yet). John and Angela Macchia, interested hikers, kept Lady and me company for a couple of hours. There were other occasional hikers who stopped for a moment.

About full dark Albert, Mark and Sho-Lo (father) Chen came with the Quantum 4 and Mike and Chuny-Lin Lee came with their 6" Newtonian. So we had three telescopes set-up. At first we could see a few stars and did observe a few objects - M-57, Saturn, Venus and Alberio - but the weather deteriorated rapidly, becoming solid overcast. At 8:00 pm there were a few rain drops, so we bailed out en masse.

This and other outings demonstrates that our astronomy class and telescope loaner program is bringing out new amateur sky gazers. Albert Chen (15) could quite possibly go on to much greater achievements (in astronomy?).

Information from Eye on the Sky BBS Regarding LLNL Guide Star Project
recovered by Bob Madden

VIEWED BY EYE @ 5KM.
7/31/92 Marien layer clouds: no shot.
8/12/92 Viewed by intinsified CCD through an 8 inch Celestron. Recorded images on VHS tape... Saw object blink when laser frequency spread was changed.
8/13/92 Several people took photographs @ 5KM. Looked through 10" telescope at the star. Planning an ATV link to LLNL 8/14/92.
8/14/92 Its hard to see through clouds. The file attached to this plan shows the laser lighting up the clouds. The ATV trial was good and will be improved for the week of 24th. Saw the star blink when the laser wavelength was changed. Saw slides from the 13th of the guide star. Seems to have lot of structure along the length of the star.
8/21/92 Planning meeting held to discuss the experiments we want to try this 8/26-28. Most will view the entire visable beam in order to estimate the scatter losses. We need to observe the polarization of the guide star itself. We mounted the Image intensified CCD to a 4" diameter 17" FL reflector telescope. It was able to see M13 and its companion 6th mag stars. We may have up to 4 low light level camera and telescope to use this next week...
8/26/92 Steady guide star all night. Only shut down to avoid satellites ATV between two Livermore sights and LLNL attempted. Each see one another using 1 Watt. We will be boosting to 40 Watt so LLNL can see us. Battery failures terminated the ATV. Attached is the digitized results from two CCD camera. Still working on ATV to MT D.. 4" OD 17" FL reflector with running average Microchannel intensified CCD was our best set up. Star seen 14 miles south with binocs. 11 miles more to Digger.
8/27/92 Digger pines not able to see beam. To many cloud and sky glow. ATV viewed direct from transmitter recorded the transmission and digitized some images. Ask to see them. Guide star visable at 32 Watts through 16 inch f 4.3 newtonian and underwater microchannel intensified CCD camera, offsight 3 KM from launch sight. Call Norman L Thomas for camera and scope details 422 0486...
8/28/92 High clouds lit up nicely. When clouds lit up the guide star fades out. @ the LLNL sight I viewed the Rayliegh scattered beam. It appears thicker than it's 4 inch width. ATV recorded the event and digitized the VHS tape. Beam can be seen to giggle north south from time to time.
9/10-11/92 Clouded out..
10/5/92 Data taken for ranging the LGS on Mt. Diablo and on Buena Vista. Report from 18 miles south that the beam was spotted via binocs between 3:40-3:50 AM
10/6/92 Fun with CCD's no serious data. We lacked time stamp.

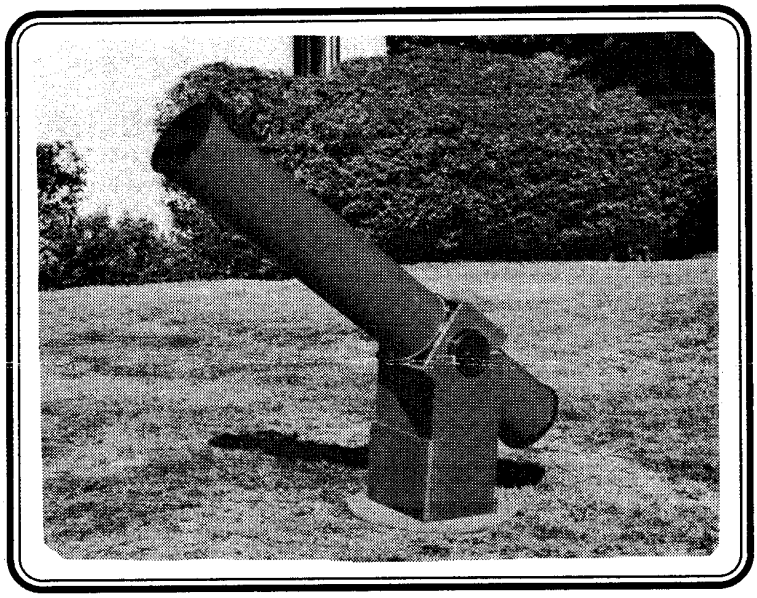
What to look for:
Look for a minimum in the Rayleigh scatter at 5-10 KM up.

continued on page 5

1993 SJAA Calendar

	General Meeting	Houge Park Star Party	Beginning Astronomy Class
Jan.	9	29	30 First one
Feb	6	26	27
March	6	26	27
April	3	30	**17** (a change)
May	1 Auction	28	29
June	5	25	26
July	10	23	31
Aug	7 Picnic	20	28
Sept	4 Slide/Equip night	24	25
Oct	2	22	30 Last one
Nov	20	19	none
Dec	18	17	none

Please read your *Ephemeris* each month for changes



Here is a status of several of the Association loaners available through Paul Barton. Call him at 408-377-0148 to make arrangements for one or them. This is a great opportunity for those who are contemplating the purchase of their first telescope to try an instrument before committing all that money.

#1	4-1/2	Newt	Available
#2	6"	Dob	Out 10/10
#3	Quant 4		Out 11/20
#4	Cometron 60		Available
#6	C-8		Out 12/15
#7	12-1/2"	Dob	Out 10/23
#14	6"	Newt	Out 11/8
#15	8"	Dob	Out 10/3
#18	8"	Cave	Available

Generally Paul loans the telescopes for two months. When there isn't a request for an instrument, Paul will continue the loan. It is best to call him for each availability. Also ready for use is the 8" cave Del Johnson has given to us. This instrument is now in useable condition after considerable work by Paul. One final note! We wish to thank "Crazy" Ed Erbeck for his donation of a very good Meade 25mm Orthoscopic. It was used at the Houge star party and gave excellent images in the C-8.

We have been asked to publish the following address for the membership to correspond with:

Manfred Glitenkamp
P.O. Box 2185
Nelspruit
1200
Republic of South Africa

Manfred is 30 years old and is interested in Science and Astronomy. Drop him a line.

ASTRO ADS

ASTRO ADS are free to all noncommercial advertisers wishing to sell astronomically related products or services. Please send your ad directly to the Editor:

Bob Madden
1616 Inglis Lane
San Jose, Ca. 95118-2825

NO LATER THAN THE 12th OF EACH MONTH! Your Astro Ad will run approximately 3-months.

Newtonian Telescope, F5-12.5 Parks mirror. 10X70 Celestron finder, 2" Meade rack and pinion focuser. 10" Byers drive gear on 2" shafts. Electronic drive with hand controller. This is an origional Telescope World mounting. Priced to sell at $1600. Contact Kim McKelvey. Days (408) 974-4099 or evenings 510 487-7268. 11/92

Classic C-8, Starbright coatings, 8X50 finder, heavy duty tripod, delux adjusting kit, 36 and 45 Celestron Plossls, 2X Celestron Barlow, Orion 10.5 Megavista, Telrad w/extra base, updated Adv. Astromaster w/hi-res encoders, Digitrack corrector, Orion SkyGlow filter, vibration pads, stool and Rigel LED lamp. List approx $2,450 new; asking only $1600 for a nice combination. Will include Orion Giant 10X70 binoculars in excellent condition for $150 or $200 seperately. Will discuss delivery. Call Robert W. Gage (Stockton) at (209) 474-1363. 1/93

Celestron 14 f/11 tube assy. w/Starbright coatings, 1979 vintage w/forks, drive base and wedge. Solid steel pier w/ levelers, 2" diag w/1.25 adaptor. 11X40 finder, counterweights (4), Acutrack d/a drive corrector, no eyepieces - $3200.

Takahashi FC 125 flourite f/8 doublet refractor. beautiful. f/8 tube, massive 4" focuser, 2" diag w/1.25 adaptor. Full aperture thousand Oaks solar filter, Cordura carring case. Mount not inc, but ideal for G-11 or Losmandy 100. suberb lunar, planetary, stellar images - $3500 John Gleason (408) 720-2493 or (510)792-8248 1/93

Orion 10X70 Astronomical Binoculars Fully Coated. Call Ed Rible in Stockton at (209) 446-0924 during day; (209) 478-5795 evenings. 1/93

Continued on page 9

DOUBLE, TRIPLE, AND MULTIPLE STARS

By Patrick M. Donnelly

I have been patiently waiting for over two weeks now for the skies to clear long enough to go out and find some more binocular double stars. I also wanted to get a glimpse of Comet Swift-Tuttle. The skies finally cleared recently for a couple of hours in the early evening to do some observing. It should be noted that my observing was conducted with a pair of 7x50 binoculars, since I am living out of a suitcase here in Cedar Rapids, Iowa. However, that does not mean that there are no interesting objects to observe, and in particular, there are no double stars to view. Here are a few to observe.

High in the northwest after twilight had ended is the optical double 16-17 Draconis. This binocular pair is an almost equal pair (magnitudes 5.2 & 5.6, respectively) of white stars. The stars are separated by 91 arc-seconds, which is well within the range of 7x50 binoculars. The stars are located at 16 Hrs. 35 Min. Right Ascension and +53.2 degrees Declination. The best way to find 16-17 Draconis is to start at the bright star Gamma Draconis and draw an imaginary line across the sky from Gamma through Beta Draconis. Then extend the line about twice the distance from Beta, and there's 16-17 Draconis.

Another pretty pair for binoculars is Kappa-1 & Kappa-2 Pegasi. This pair consists of a magnitude 4.4 primary and a 5.6 secondary, separated by approximately 339 arc-seconds. The pair is located to the upper right of the Great Square of Pegasus on a straight line from Beta Pegasi (Scheat) through Omicron Pegasi at 22 Hrs. 8 Min. Right Ascension and +53 degrees Declination. The pair appears as two yellow stars to me.

Moving eastward the next interesting double is Alpha Ceti (Menkar). This pair consists of a magnitude 2.8 primary and a 5.5 secondary, separated by a very easy 15.8 arc-minutes. Alpha Ceti is locate at 3 Hrs. 1 Min. Right Ascension and +3.8 degrees Declination. It is the brightest star in its region of the sky.

Another star to try to find is Fomalhaut. It has an apparent companion about 2.5 degrees south. To find it observe the two bright stars below Fomalhaut, Gamma and Delta Piscis Austrinus. Just above Delta is a small pair of stars. The one on the left is the companion to Fomalhaut.

The final double to view is Theta-1 & Theta-2 Tauri. This pair is part of the Hyades open star cluster, and it is the neat pair of stars to the lower right of Aldebaran. The pair should be easy to find. The pair consists of magnitude 3.3 and 4.0 stars, separated by about 337 arc-seconds. On the other side of Aldebaran is another interesting pair, Sigma-1 & Sigma-2 Tauri. This pair is also part of the Hyades. In fact, plan to spend some time observing both the Hyades and the Pleiades clusters with your binoculars.

In closing, I would say that one does not need a big telescope to enjoy the many find sights in the sky. One of the best ways to observe is to just wander around the sky with your binoculars to see what you can find.

GROUP 70 Computer Bulletin Board

A computer bulletin board service (BBS) has been set up for use by Group 70. The number is 510-443-6146. The initial hours of operation are from 5-10PM Pacific. These hours will be expanded based on requests posted to the bulletin board. You should log on at 1200 or 2400 baud, parity none, 8 bit, one stop bit. It works best with IBM type machines, but also works with Macintosh. It is intended as a forum for discussion of issues related to Group 70, or astronomy in general. The database contains many graphic images that you can download, and you are welcome to upload images. The preferred format is .GIF, graphic interchange format. This is intended as a means to enhance communication among members of Group 70. Discussions of work in progress, site selection issues, computer control developments, and plans for use of the finished telescope are only a few of the topics that can be addressed on the board.

You are encouraged to explore this new system, and air your thoughts about Group 70, and about the BBS. This system also is used by the Tri-Valley Stargazers, and you are welcome to leave messages in their forum also. The Sysops are Mike Rushford and Rich Combs. You can contact Mike at (510) 443-8489, or Rich at (510) 846-1906 if you have problems connecting.

Fremont Peak 11-28-1992

by Paul Barton

Friday night, the day after Turkey day, was fine in San Jose for star gazers: in the 40's, clear, and the moon set about 8:00pm. Polaris could even be seen. Saturday looked fine so off we went to the Peak arriving about 4:00pm. to set up the JMI - 18. A high overcast moved in about 5:00pm. The outlook was dismal for several hours, but the skies slowly cleared up around 10:00pm, becoming pretty good by midnight. The temperature was 46° F most of the night becoming 44° F at daylight. It was dry and warm for this time of year. Seeing was only fair, even though it was clear.

Paul Barton , Lady, Mike Green and Bob Brauer, stayed all night, Bob taking astro photos with his special astro photography set-up. We had one long coffee "klatch" until it began to clear, then off to work (play). Jim Baggot left before 10:00pm. It really looked hopeless at that time.

There were a few boy scouts camping on the hill above, but they were "in their sacks" by the time the stars were visible. Those in attendance were:

Paul Barton and Lady	JMI-18
Jim Baggot	C-8
Fred Rappaport	C-8
Lew Kurtz	LX-200
Bob Brauer	SP-102 6" f6 Newt.
Mike Green	C-8

There will be a special star party, 6 Jan, at a school located on Strayer. If you wish to participate contact Jack Peterson at 262-1457 for further arrangements. This party should be finished by 9-9:30pm

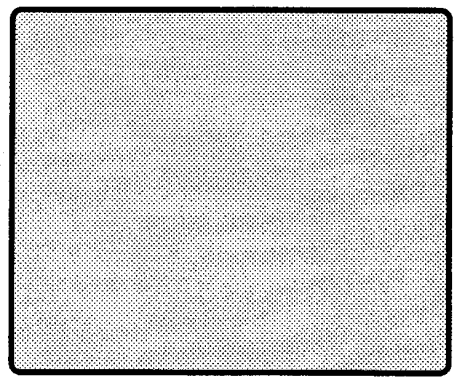
"FOSTER Teachers Prepare to Fly Aboard the KAO"
by E. DeVore/D. Koch

The FOSTER Program—Flight Opportunities for Science Teacher En-Richment—is underway. The FOSTER Program is a new NASA educational outreach program for elementary and secondary teachers envisioned to enrich science education through airborne astronomy. Ten Bay-Area teachers are participating in the first year of the FOSTER Program. They are Jill Baumgartel (Woodside High School, Woodside); Bob Choate (Sheppard Middle School, San Jose); Jackie Ervin (J. F. Kennedy High School, Richmond); George O'Neel (Burnett Academy, San Jose); Mark Piccillo (Frick Junior High School, Oakland); Jeff Ring (San Jose High Academy, San Jose); Raymond Rogoway (Independence High School, San Jose); Chelda Ruff (Helms Intermediate School, San Pablo); and Mary Lou Zandona (McNair Intermediate School, East Palo Alto). In addition the planetarium director at Independence High School, Gail Chaid, is participating in the project.

In October the teachers came to NASA Ames Research Center for two days of intensive workshops. Presentations on astronomy, astrophysics, aviation, and technology aboard the KAO filled the days. Andy Fraknoi, Astronomical Society of the Pacific, presented an "Introduction to the Universe"; Dan Lester, U. of Texas, Austin, a KAO Principal Investigator, shared his research program and the experiences of Texas teachers who flew aboard the KAO last summer; Geary Tiffany lead a tour of some of the research aircraft at ARC and gave a pilot's view of airborne research; Cheri Morrow,NASA Headquarters, Astrophysics, presented "Mission to the Universe"; David Morrison, Director of Space Sciences at ARC, welcomed the group and led a lively discussion of how NASA can best work with the schools in the FOSTER project; Dave Koch, Astrophysics, offered a view of observing from the ground up; and Garth Hull, Educational Programs, guided the group through the Teacher Resource Center. The teachers also had the opportunity to sit in on the annual KAO users meeting.

A second two-day workshop was held in November. Hands-on science activities were presented by the teachers and the FOSTER staff. Astronomy activities for the classroom—star maps and locators, spectroscopes and telescopes—were constructed by the teachers and used in the planetarium and out-of-doors at Independence High School. A star-gazing party with the San Jose Astronomical Association capped the first day. The next day, Scott Sandford, Astrophysics Division, explained his spectroscopic work and took the teachers on a tour of his lab; Allan Meyer, Research Scientists for the KAO, showed the teachers how the KAO telescope tracking is planned; and Bob Morrison and Russ Padula demonstrated the construction of a flight plan. To get everyone ready, Carl Gillespie, Jr., Airborne Operations Manager, led a preflight information session.

The teachers are enthused and excited about the FOSTER Program and their upcoming flights. They will be participating in science missions aboard the KAO in January and February of 1993. Following the flights, the group will reconvene in March for work on the FOSTER curriculum. The FOSTER program is managed by Jeff Bennett and Cheri Morrow at NASA Headquarters, Astrophysics Division. At ARC, the Co-Managers are Dave Koch and Garth Hull with participation by Carl Gillespie, Jr. and assistance of Tom Gates, Aerospace Education Specialist. The project is being developed by Edna DeVore at the SETI Institute, who is the Project Teacher for the FOSTER Program. The pilot version of FOSTER will gradually expand to a national level in five years and fly 50 teachers per year.



Houge Park 4 December 1992
by Paul Barton

Sundown came about 4:00pm, nearly dark by 5:00pm. The weather was fine, warm (relatibvely), dry, lots of moon, over half a moon. Telescopes and public were slow ot arrive. Due to early darkness, it seemed later than it really was. Some telescopes (operators) were begining to think about leaving — no public — around 8:00pm (seemed much later), when a few visitors showed up. Eventually there was a pretty good turn out. There were about fourteen telescopes and their operators plus perhaps 50 visitors, more adults, less small fry then usual due to a chilly night.

The moon was too bright to see much, but we could see comet Swift-Tuttle. The parking lights were were on about 10:00pm (Rich Neuschaefer was still observing with his brand new 155 mm refractor). [Rich's refractor is handsome enough to make a believer out of you - ed]

In bed by 11:00pm.

Hey, you guys! How about coming around and signing in — legibly — . Its easy to miss someone in the dark! PMB

Those in attendance were:

Paul Barton and Lady	JMI-18
Ed Erbeck	10" Coulter
Rich Neuschaefer	155 mm AP ED APO
Bob Madden	C-8 Loaner
Jerry McKee	13.1 Super Mod Dob
Dave Enos	6" Russian Mak
Paul Graves	C-8
Bill O'Shaughnessy	60 mm Ref
Shelly McAleese	10" Dob
Joe Vallee	Odys 8"
Terry Kahl	6" Dob
	20X80 Bin
Bob Ashford	C-8
Tom Sharkey	6" Newt
Lew Kurtz	10" LX200
Jack Zeider	
Bob Brauer	
Mark Wagner	
Paul Kroeker	
Darell Kroeker	

CELESTIAL CALENDAR

Jauuary 1993

LunarPhases	Date	Rise	Tran	Set
FM 04:37hr	01-1	1652	2358	0704
LQ 20:01hr	09-1	2352	0522	1050
NM 10:27hr	16-1	0647	1157	1703
FQ 15:20hr	23-1	1053	1748	0005
Nearer Planets				
Mercury	07-1	0467	1118	1547
1.42 AU	17-1	0712	1140	1604
Mag -1.2	27-1	0732	1209	1642
Venus	07-1	0939	1505	2026
0.70 AU	17-1	0926	1508	2045
Mag -4.4	27-1	0911	1509	2101
Mars	07-1	1641	0002	0724
0.66 AU	17-1	1546	2309	0633
Mag -1.0	27-1	1454	2218	0543
Jupiter	07-1	2356	0545	1132
5.14 AU	17-1	2320	0508	1054
Mag -2.1	27-1	2242	0429	1016
Saturn	07-1	0851	1359	1902
10.7 AU	17-1	0815	1324	1828
Mag +0.6	27-1	0740	1249	1755
SOL Star Type		G2V	Mag - 26.72	
1906-2224	07-1	0711	1159	1643
1947-2054	17-1	0706	1200	1650
2029-1842	27-1	0659	1201	1659

Astronomical Twilight

JD 2,448,995.5	07-1	0532 - 1821
9,005.5	17-1	0528 - 1827
015.5	27-1	0523 - 1834

Siderial Time

Transit Right	07-1	0000 PST=0700
Ascention at	17-1	0000 PST=0739
Local Midnight	27-1	0000 PST=0819

Darkest	Saturday Night	Jan. 23
Sunset		1655
Twilight End		1831
Moon Set		1819

TIMES AND DATES ARE PACIFIC STANDARD5

Comet Comments

by Don Machholtz

Periodic Comet Swift-Tuttle has disappeared into the evening twilight as it heads south and into regions behind the sun. Meanwhile, Periodic Comet Schaumasse graces our evening sky, it will be well-placed for the first half of 1993. Finally, I have word of a new comet in our morning sky, you may want to get out and see it.

Comet Ohsita (1992a1): Discovered by Ohshita of Japan on November 24 in the morning sky, this comet is slowly moving away from the sun. As it does, it approaches to within 0.6 AU of the earth in late December. The ephemeris, printed below, should be accurate to within a degree, the magnitude is uncertain.

The possibility exists that this comet will produce a meteor shower on January 29, plus or minus a day. At that time the earth passes 1.7 million miles outside the point that the comet was on December 7. The Southern Hemisphere is favored, but I'm not sure at this time if it would be in the morning or evening sky.

EPHEMERIDES

PERIODIC COMET SWIFT-TUTTLE (1992t)

DATE (UT)	RA (2000)	DEC	ELONG	SKY	MAG
12-24	19h55.2m	-15°34'	26°	E	5.1
12-29	20h04.6m	-18°43'	22°	E	5.3
01-03	20h13.6m	-21°36'	18°	E	5.5
01-09	20h22.4m	-24°15'	15°	E	5.7
01-13	20h31.0m	-26°43'	13°	E	6.0

PERIODIC COMET SCHAUMASSE (1992x)

12-24	03h44.6m	+19°11'	146°	E	11.1
12-29	03h39.1m	+20°38'	140°	E	10.7
01-03	03h34.9m	+22°12'	134°	E	10.4
01-08	03h32.0m	+23°53'	129°	E	10.1
01-13	03h30.8m	+25°39'	124°	E	9.8
01-18	03h31.4m	+27°31'	119°	E	9.5
01-23	03h33.9m	+29°28'	115°	E	9.2
01-28	03h38.5m	+31°29'	111°	E	9.0
02-02	03h45.3m	+33°32'	108°	E	8.8
02-07	03h54.3m	+35°37'	105°	E	8.6
02-12	04h05.6m	+37°42'	103°	E	8.4

COMET OHSHITA ($1992a_1$)

12-24	12h12.6m	+27°30'	100°	M	10.7
12-29	11h48.9m	+42°24'	113°	M	10.8
01-03	11h05.8m	+57°17'	123°	M	11.1
01-08	09h42.8m	+63°39'	129°	M	11.5
01-13	07h30.6m	+73°25'	128°	E	12.1
01-18	05h34.6m	+72°08'	124°	E	12.6
01-23	04h30.9m	+69°46'	120°	E	13.1

Don Machholz (916) 346-8963

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

SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP

Membership only: $12 Membership / S&T: $32 Junior (under 18): $20

Name: _____

Address: _____

_____

Telephone: _____

Please bring this form to any SJAA Meeting or send to
Jack Peterson, Treasurer
San Jose Astronomical Assoc.
1840 Yosemite Drive
Milpitas, CA 95035
Telephone: (408) 262-1475

MAKE CHECKS PAYABLE TO "SJAA"
Please check type of membership and if New or Renewal

Membership Only ___ Membership/S&T ___ Junior (under 18) ___
New ___ Renewal ___

SAN JOSE ASTRONOMICAL ASSOCIATION
1840 YOSEMITE DRIVE
MILPITAS, CA. 95035

ADDRESS CORRECTION REQUESTED

NON-PROFIT ORGANIZATION

U.S. POSTAGE PAID

PERMIT NO. 5381

SAN JOSE, CALIFORNIA

SJAA HOTLINE
24 HOUR INFORMATION
408-559-1221