

SJAA EPHEMERIS

VOLUME 4 NUMBER 8 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION August 1993



The Eyepiece
by Bob Madden

It has been a quiet month, except for superb viewing. This month get ready for the SJAA picnic at Fremont Peak. It should be a whale of a lot of fun this year as it has been in the past. As Jack Zeiders said last month, "The association will supply the hamburgers and buns with condiments. You may bring something extra to share. A salad, drink, something to snack on while the coals get hot, or any thing beside an empty stomach (that is OK too) would be nice." If you have time please call Paul Barton to help us with the head count. His telephone number is on the marque on page seven. Once there, watch out for the "super soaker" and Frank Dibble. See you there.

In July we had a very informative talk given by Rich Combs of the TriValley Astronomers (and LLNL) on eye pieces including Barlows. It was quite interesting. We all know Naglers are one of the premier eye pieces and expensive, but Rich explained how they worked and maybe an undesirable characteristic - the kidney effect. I hadn't thought much about eye pieces and how they work and now I have a better understanding of them. Would you believe that Rich's data indicates that an Edmond RKE eye piece has the most

- Aug 7** No activity.
- Aug 14** Picnic at Fremont Peak; replaces the general meeting. Call Paul Barton (phone # on the credit marque pg 7) if you will attend so we can get a head count for burgers and dogs. You should bring something extra.
Sset 7:58, Atwi 9:34. Moon, 8% rises 4:01 am. No Host star partys for stay at home folks
- Aug 20** Star Party, Hoge Park. Sset 8:23 pm, 28% moon sets 10:54 pm.
- Aug 21** Star party at H. Coe or Grant Ranch. Sset 8:25, 2% moon rises 5:14 am.
- Aug 26** Eighth session of Observational Astronomy Class, 8 pm at the Rosicrucian Planetarium.
- Sept 4:** General Meeting at the Milpitas Library 8:00 pm. Preceeded by the Board Meeting at 6:15. General Meeting will be Slide and Equipment Nite. Come show your photographs of the night sky and your astro trips.
- Sept 11:** Star party at Fremont Peak SP. Sset 7:19, 21% moon, Mrise 2:47 am
- Sept 18:** Star Party at H. Coe SP. Sset 7:09 pm, 13% moon, Mset 8:44 pm. Also star party at Grant Ranch County Park.
- Sept 24:** Star Party at Hoge Park. Sset 7:01 pm, 73% moon, Mset 2:17 am.
- Sept 24:** Ninth session of the Observational Astronomy class, 8:00 pm. at the Rosicrucian Planetarium.

accurate spec. sheet. Bottom line as I see it is "If the eye piece gives you views to your satisfaction use them - be sure to compare with others too".

We had a lost Baby Stroller at the June Hoge Park star party. Any one find it? If you have please call R.K. Owen at 377-5373. He will be happy to have it returned.

There will be no general meeting this month, but remember September's general meeting will be Slide and Equipment night. Here is your chance to show off your favorite equipment or astro-photos.

One final note is that the meeting places are changing. As many have discovered, the Observational Astronomy class has been moved to the Rosicrucian Planetarium for this month. If things are worked out we may stay there permanetly (as any thing can get). We are still at the Milpitas Library for the general meetings however.

Locations of SJAA Star Parties

by Alice and Dan Finley

Having just purchased ourselves a new 10" meade with an LX 200 drive we needed to know the latitude and longitude of the locations we plan to observe at. We needed this data for the computer used in the mount. Asking most amateur astronomers brought a small uncertainty in their answers. To settle this question we went to the USGS maps to get the exact locations of our favorite sites. To save others the trouble and for those who use computer programs for deriving their ephemeris of the night of observation, we have asked your editor to publish this information.

Please go to page 2.

DOUBLE, TRIPPLE, AND MULTIPLE STARS

by Pat Donnelly

I have been working in the United Kingdom since April, and I only get home about once every five weeks for a few days. As such, I have had to restrict my observing to only about a couple hours a month. Two nights ago I got the telescope out in the backyard and started observing. I was interested in seeing some old friends. I wanted to observe some of the best double stars in the very early summer skies. Here is my list.

I started with Gamma Leonis. Gamma is a beautiful true double system about eight degrees above Regulus. Gamma consists of a magnitude 2.5 primary and a magnitude 3.5 secondary. The components are separated by about 5 arcseconds. This star system is about 90 light years from the earth, and it has a period of approximately 600 years. The separation between the two components has been widening since their discovery in 1782. I find the colors of Gamma Leonis to be both yellow. I especially like Gamma because it looks like a double star.

After Gamma Leonis I moved down to Gamma Virginis. I always try to observe this double because in about fifteen years the components will be so close that they will not be separable. This system consists of two (2) magnitude 3.3 stars. Their separation now is about 4.0 arcseconds, but by the year 2010 the separation will be less than 0.5 arcseconds. Gamma is about 32 light years from the earth and has a period of 171 years. Both components appear white to me, and this system is located in a very neat part of the sky. There are several other doubles nearby to observe. This star is a must to observe since it will become unresolvable for the rest of your life soon.

The next star I observed was Alberio. The colors on this star always are a treat to see. This was the first time that I have observed Alberio since I learned that the bright yellow primary is a close double just on the edge of resolution. At this time the two components of the primary are separated by about

0.6 to 0.7 arcseconds. When these two stars were discovered in 1980, the separation was about 0.2 arcseconds. Perhaps you can be the first person in the SJAA to separate these stars. This means that Alberio is actually a triple system, and then it would qualify as one of the best triples in the sky. For the record the yellow and blue components are separated by 30 arcseconds. Thus Alberio should be resolvable in just about any telescope.

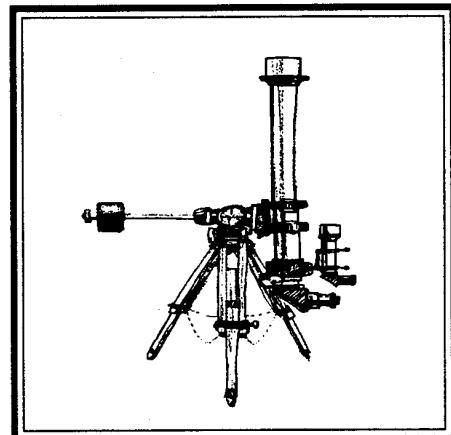
The final star in my journey is Gamma Delphinus. This star consists of a magnitude 4.5 primary and a 5.0 secondary. The components are separated by about 10 arcseconds, and they are thus very easy to resolve. The star is a true binary system about 100 light years from us with a period of 7000 to 10,000 years. The colors, that I see, are yellow and green. I find this star quite pleasing to observe.

I then went to bed, but because of jet lag I ended up back at the telescope early in the morning. At this time I observed Gamma Andromeda and Gamma Arietis. These two stars also qualify as lovely doubles. I hope you can observe all of these soon.

SJAA STAR PARTY SITES

(Continued from page 1)

Location	Lat.	Long.
Fremont Pk	36° 45' 30"	121° 30' 15"
Grant Ranch	37° 20' 00"	121° 41' 00"
Henry Coe	37° 11' 15"	121° 40' 00"
Hogue Park	37° 15' 05"	121° 55' 00"



Coastside Observers Adventures at the Texas Star Party

By Allen Mason

The adventure began at home, on the coast. It became apparent we would never be able to fit all of our camping and telescope equipment in Tom's van and have any room left over for passengers. The expedition consisted of Tom Palmer, his two boys Corey and Spencer, my son Allen and myself. Last minute we decided to rent a U-haul and pull it with my truck. It was a mad dash to get my truck ready, pick-up the U-haul and get everything loaded. We were on the road by 4 o'clock Friday afternoon with 1500 miles ahead of us.

It was an all nighter through LA and out to the desert. We pulled off the highway, just before dawn, east of Phoenix. The night was mostly overcast. We tried to identify the few bright stars we could see. It was great to be in the desert. We sat in the car for awhile thinking we were going to get some sleep. The sky was quickly brightening, so we eagerly continued down the highway.

We stopped in Phoenix at my brother's house and grabbed a few hours sleep. In the heat of midday we departed. We drove on to El Paso, Texas, where we spent the night in a motel. The next morning we were up early and on the road. We arrived at the Prude Ranch outside of Fort Davis, Texas, at about 1 o'clock (CDT) on Sunday afternoon.

The first order of business was registration at the main lodge and finding our camp site. We decided to set up camp at the main, upper (football) field. It was already quite full and we were lucky to find a spot for our tents (there was lots of room for the telescopes but only a limited area for tents). In no time at all we were set-up, had the telescopes collimated and ready for twilight to arrive. Of course we still had four hours to wait and an overcast sky worrying us.

To take our minds off the overcast skies we headed to chow. The first night's dinner was excellent, chicken and steak fajitas, Texas style. The food for the rest of the week was pretty good but we quickly tired of the institutional flavor of it. Continued on page 3

TEXAS

Continued from page 2

When we returned to camp after dinner the clouds were still pretty thick and observing was looking doubtful. As twilight approached we could intermittently see Jupiter through broken clouds. As twilight ended several holes in the clouds appeared, teasing us into searching out a few deep sky objects. We later learned these holes in the clouds were referred to as "sucker holes" by the locals. It was pretty frustrating at first because every time we would find something it would soon slip behind a cloud. However we were amazed at how dark the skies were and how bright the familiar Messier objects appeared. M51 was showing detailed spiral structure and bright H₂ regions.

We were particularly struck by M83 a barred spiral galaxy in eastern Hydra. The barred structure could clearly be seen through Tom's 20" telescope. We looked up M83 in one of our books to verify that it was a barred galaxy, the book had a photo of the galaxy that looked exactly as the object we were looking at through the eyepiece. We were blown away by this...galaxies looking like photographs!

I overheard someone nearby mention Omega Centauri and we began checking our charts to determine if we could see it. I scanned the southern horizon with binoculars and suddenly Bam! there it was... the largest globular cluster in our heavens. It was a naked eye object! We swung the telescope into position and were amazed by the size and beauty of this object not usually visible in our Bay Area skies.

Another unusual object not seen at our northern latitudes was Centaurus A (NGC 5128) a peculiar galaxy in the southern sky. This large oval shaped galaxy with wide dark lanes across the middle looked like a cheeseburger in the sky. Actually the galaxy was familiar looking, having seen in many times before in photographs of famous galaxies. But this was our first time to observe it with our own eyes.

As the night progressed the sucker holes got bigger and whole sections of the sky would open up. A light shower moved through at midnight re-

quiring us to briefly cover-up. By about 1 am the clouds had blown over revealing a magnificent dark sky with the rising Milky Way splashed across the eastern sky. I noticed an unusual glow in the southeast which at first I thought was the lights of Fort Davis, but then realized it was the star clouds of Sagittarius and Scutum. Tom and I were like two kids in a candy store. We were getting excellent views of all kinds of deep sky objects from a truly dark sky site.

By 4 am I had finally wore myself out and went to bed with the milky way high overhead. And so the week went, hot days, clear warm nights. Several vendors set-up during the day to sell us there wares. (Which we were of course eager to complete our paraphernalia wish lists...charts, books, eyepieces and t-shirts). It was an amateur astronomers playground.

I spent a lot of observing time pursuing galaxies from the Herschel 400 lists and attempting to improve my astrophotography skills. Tom hunted down some amazing clusters of galaxies using finder charts from "Megastar". With these charts Tom and I were able to observe fields of view chocked full of galaxies including some extremely faint 14th and 15th magnitude fuzzies. Our boys (when we could get them out of the pool) also enjoyed the skies, using the 10" Dobsonian, binoculars, and visited several of the other telescopes.

On Thursday evening mother nature let us know what she was capable of with a major thunderstorm. This was a wild electrical storm with lightning strikes all around us. A tree at the ranch was hit and burst into flames. Then hard, hard rain followed by pea sized hail and major wind all lasting about 20 minutes. Our campsite was almost totally flooded, my tents lay in several inches of water. We figured about 2 inches of rain must have fallen.

When darkness fell it was totally overcast which meant that it was time for the annual star wars light battle. This is one of the truly bizarre traditions on cloudy nights at the TSP. All kinds of lights shooting devices going off all over the field and up to the cloud bottoms. One guy had some kind of aircraft landing light setup. Groups of people across

the field established offensive luminary assaults, destroying the night vision on there neighbors. After about an hour of flashing each other, the cry went up to charge the lower fields. I joined in as a group of about 30 warriors raided the other camps with our strange luminary attack. What a surreal scene as we penetrated the darkness and others joined in the mayhem attempting to defend themselves with D-cell powered counter attacks.

For me the trip was all I dreamed it would be. I look back on it now not thinking of the effort required to get there and back, but rather the friends we made that had also traveled from far away places to join in this celebration of our hobby. I'll also always remember the friendship that was strengthened with my copilot and fellow observer, Tom Palmer. I wonder if I should start making plans for next year.

STAR PARTIES

by Paul Barton

Fremont Peak - Sat June 19, 1993

A work party at the 30" FPOA - painting, repairing, roofing, cleaning, etc. - accounted for many people and telescopes and a B-B-Q. The sign-up sheet [not shown here] is only a sample. There may have been as many as 50 to 75 telescopes, people, families and dogs. Every available space at both locations was in use.

And what a fine outing for a star party as there was no moon, shirt-sleeve weather, dry, and heavy fog below. It was so dark you could barely see your neighbor, ten feet (or less) away.

Jim Bartolini, Mark Wagner and John Kinklewitz lifted the heavy JMI-18 out of the van and many hours later back into the van, saving much work with sloping planks. On this trip there was no room for the planks.

The JMI-18 is a grand telescope - Continued on page 4

Wanted - for our telescope loaner program: A Super Polaris GE Mount to replace our current (shaky) mount used with the Solar Telescope.

STAR PARTIES continued

Continued from page 4

and very popular. People often come over from their own telescopes for a comparison. When it is this dark it is difficult to tell who is who.

Mark Wagner and John Schoenberger and others operated the telescope, mostly not waiting for the computer (to slow). Paul Barton sat and ran the maps and computer.

Heavy fog was encountered on the way down the hill Sunday morning.

Rosecrustion Sunday 20 June 1993

Paul Gunther and hundreds more - - no exaggeration - - looked like Coney Island (although I have never been there). There were even hot dog stands, soft drinks and even belly dancers. SJAA was represented by Paul Mancuso and his Questar and Paul Barton with the Association's C-8. The Association's Solar telescope proved to be unuseable due to an in-appropriate eyepiece.

There was a lot of interest in views of the Sun through the two telescopes. We were kept quite busy with lots of people of all ages and many nationalities.

Fremont Peak 23 June 1993

Bob Madden and I showed at the Peak followed by Fred Rapport, John Schoenenberger and his daughter. It was a fine outing, warm, clear, a small moon which went down about midnight. Bob Madden had battery trouble with his DSC. Fred was doing astrophotos with his new ultima C-8 and a battery, or something, died leaving him with a dobson like polar mounted star collector.

All three telescopes had computers, but all were different and we couldn't transfer information from one to the other very well. (Need an interface?) But the sky that good, who needs computers? You know mid-week at the peak is ve-e-e-r-y quiet!

Houge Park 25 June 1993

There were 26 who signed in

and many more who didn't. It was hot (90° or more), clear, first quarter moon, dry (no sprinklers), lots of people and lots of telescopes. Terry Kahl and Mark Wagner were trying out their new Dobsons. Lady chased a Bull dog a few feet then was restrained - no smartz. We viewed the usual objects - Ring nebula, Sombrero nebula, Whirl Pool, M-4, M-6, M-7, M-13, M-92, etc. It was a fine outing.

6th Observational Astronomy Class Sat. 26 June 1993

This was a smaller than usual group. I guess it was too hot. Jack Peterson reviewed neutron stars, binary stars and more. Jack followed with more star and constellation slides including Bootes, Corona Borealis, Hercules, Lyrae, Libra and Ophiuchus. We closed shop about 9:30 A.M.

MONOPEC

INVENTOR WINS ROLEX AWARD FOR ENTERPRISE

Project to design observatory domes
earns international recognition

San Francisco June 6, 1993 - Rolex Watch USA announced that Ethan W. Cliffton, an architect and head of MONOPEC Corporation based in San Francisco, has been named Honorable Mention winner in the 1993 Rolex Awards for Enterprise program. Cliffton received an engraved Rolex Oyster Perpetual Chronometer timepiece and a Commemorative scroll in recognition of his efforts to develop aerodynamic and efficient observation domes for short focal-length telescopes.

Rolex said the award recognizes Cliffton's outstanding ingenuity and commitment to advancing observatory design and that his work embodies the true spirit of enterprise Rolex seeks to honor and encourage with this program.

"I am very pleased to have been named an Honorable Mention recipient of a Rolex Award for Enterprise," Cliffton said. "The award draws world attention to the vital role of observatories in expanding our knowledge of the universe.

The award further symbolizes Rolex' visionary support for improving the efficacy of these special research facilities."

Cliffton and his team of designers are developing a prototype observatory dome designed to withstand harsh weather conditions often found at the remote sites where telescopes are increasingly being located to enhance their ability to scan the heavens.

Cliffton was one of 33 worldwide Honorable Mention winners selected from thousands of entries by a committee chaired by Andre J. Heiniger, Chief Executive Officer and Managing Director of Montres Rolex, S.A. The committee was composed of 10 distinguished international scientists, authors, physicians, explorers and academics.

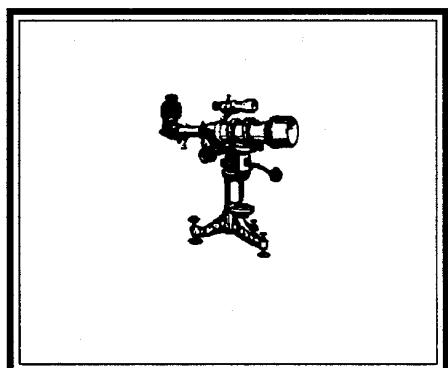
Follow-up on DATAPORT BBS

by Jim Van Nuland

Here's a follow - up to the July article regarding BBSs and astronomy information.

The DATAPORT bulletin board (408) 259-3019, is now carrying the SCI.ASTRO news group from Usenet. I have asked the Sysop to also obtain SCI.ASTRO.HUBBLE. He will most likely do that, but only if he expects people to read it! So if you are calling DATAPORT, leave a note for the Sysop, thanking him for SCI.ASTRO and asking if SCI.ASTRO.HUBBLE could also be added.

BTW (that's "by the Way" in BBSpeak), this board is very busy, so if you call it regularly, please see about using an off-line reader instead of reading it on-line. See me for a PC program if you don't have it. There are also readers for the MAC.



All about Eyepieces

Rich Combs, TriValley Astronomers
by Jim Van Nuland

(JVN: I have a bunch of notes taken during Rich's talk, but they don't seem to jell into any sort of summary or useful review of the talk. I don't know if it'll be of much use for the newsletter. I didn't catch such things as which types give the best eye relief, or what goes with short or long objectives, etc.)

A scope can be used (sort of) without an eyepiece; try getting your eye at the image plane. Try holding your head a little way back, too.

Types

A number of obsolete oculars were briefly covered: the Galilean, Keplerian, Huygens, Ramsden — none deserve to live, but the Galilean (simple concave) is still used in cheap opera glasses, and most junk. Small refractors have only Huygens eyepieces, which are cheap.

Better are Kellner, Erfle, (Abbe) Orthoscopic, designs that are older but which work well within reasonable limitations.

Rich's chart showed a great number of complex oculars, few of which were ever actually used! The reason: anti-reflective coatings, or more specifically, the lack thereof. Without coatings, there is about 4% light loss at each surface, and the light is reflected. Two results: with 8 elements, only half the light comes through, and there are a few HUNDRED combinations that can cause ghost images! That's what happens to that 4% that doesn't come through — it bounces around, reducing contrast.

Nagler's oculars (and modern camera lenses) would not work if they did not have high-tech coatings to eliminate nearly all of these losses and reflections.

Magnification....

Magnification range: minimum is about 3X objective diameter (inches), giving an exit pupil of about 7mm, matching the average young, dark-adapted eye. Maximum is 50 per inch, determined by the diffraction limits on

optical performance. This gives a tiny 0.5mm exit pupil, which can be bothersome if you have "floaters" in your eye.

Magnification is based on "standard" in which an object is placed 10 inches from one's eye, normal reading distance. So magnification of objective is f.l. / 10, and of an eyepiece, 10 / f.l. Combining them gives the well-known rule, magnification of a telescope is (f.l. objective) / (f.l. eyepiece).

The exit pupil is visible just behind the eyepiece; point the scope at the sky, and stand a little way behind and in line with the eyepiece. A caliper may be used to measure the exit pupil. Then magnification may be calculated from (objective diameter) / (exit pupil diameter).

To properly see all of the field, one's eye must be exactly at the exit pupil. With an LPR filter, the field is sometimes so dark that one can't see the edge of the field. Rich suggests avoiding high power for this reason, when using LPR filters.

Fields of view...

True field of view of a scope-eyepiece combination may be measured by timing an equatorial star as it drifts across the field along a diameter. Then (True field in minutes of time) = (drift time in seconds) / 4. But true field depends on the focal length of the scope, and on the diameter of the field stop inside the eyepiece. JVN: Calculate: (true field, degrees) = 57.3 X (f.l. objective) / (diameter of field stop).

Apparent field is what appears when looking into an eyepiece — no scope needed, just hold up the eyepiece and look at the large circle of light. Note that the apparent field is a property of the eyepiece only. JVN: calculate: (apparent field in degrees) = 57.3 X (diameter of field stop) / (f.l. of eyepiece). But this loses accuracy with some extremely wide oculars.

The above two definitions may be combined. For a given combination, Apparent field = (true field) X magnification.

Rich assigned the following homework, and even passed out a

worksheet to use. For each ocular you own, find the apparent field, and compare that with the field claimed by the maker. There is considerable "field" inflation, with some claims that are patently incorrect (i.e., lies).

Big unknown: how accurate are the claimed focal lengths? Does anyone have a way of accurately measuring the focal length? JVN: with camera lenses, Modern Photography magazine reports lab-measured focal lengths for fixed-length and zoom lenses, and it is rare for a zoom to be correctly marked. A typical 28-105 zoom will measure 30 to 103. Part of this is the desire to mark the lens using "standard" focal lengths, such as 28, 35, 50, etc., and part is the difficulty of getting exactly the desired focal length when optimizing the design. Expensive fixed lenses, such as the professional-grade Nikon and Leica, are usually within 0.1mm aberrations.

Rich discussed spherical aberration, astigmatism, coma, with diagrams showing where the light goes in each case. Many oculars show "seagull" shaped stars at the edge; these are a combination of coma and astigmatism.

The field stop is placed (by the designer) at the place where the aberrations become excessive. In most cases, one can obtain a wider true field by removing or otherwise opening up the stop; however, the additional field will invariably be defective. This is a catch-22 situation, as if the additional field were "not" defective, the designer would have put in a wider stop!

Longitudinal color: the eyepiece or objective has a different focal length for various colors. Manifested as a colored halo surrounding a star at the center of the field. This is the classic chromatic aberration in any refractor. Some definitions: Achromat: the focal length is corrected at two colors. Apochromat: corrected at three colors. (JVN: there were more, but I didn't catch them.)

Lateral color, or Spherocromatism: the eyepiece or objective has a different magnification at various colors. This is manifested as a tiny spectrum when a bright star is placed near the edge of the field of view.

Continued on page 6

EYE PIECES

Continued from page 5

Rich displayed a number of spot diagrams for various telescope and eyepiece types; in the case of some of the modern eyepieces (Nagler, Pretoria), the aberrations can be caused to compensate!

Orthoscopic

This is a misunderstood term. It means "free from distortion"; this aberration is present when (especially at the edges) straight lines appear curved. There are several optical designs that may be termed orthoscopic. Most of the oculars that are labeled Orthoscopic are the Abbe design (triplet field lens and plano-convex eye lens), or the Symmetrical (two identical doublets, facing opposite directions). Modern wide-field oculars have considerable distortion!

In a telescope, distortion is usually of no consequence, unless one is making position measurements or something involving precise shapes.

Cleaning: Rich uses Windex. Use only a very small amount on a cotton swab or corner of a cloth. Never apply to ocular as the liquid might seep inside.

WANTED - VAN WITH TELESCOPE OPERATOR

SJAA 11" Celestron Compustar
needs Operator

As Many know the SJAA owns a Compustar 11 which is used for public and school star parties. Jack Peterson has bee the operator in the past, however, his van is in repair and is unable to get the telescope to the star parties. Here is an opportunity to serve the Association and the public and have a fine instrument for your own personal use when there is no star party. Batteries, charger and all the necessary equipment is included. The Association is accepting applications (names) of members who might be interested in taking on this task. Interested persons are to



Paul Mancuso and Paul Barton showing the Sun at the Rosicrucian Museum.
Photo by Bob Keller.

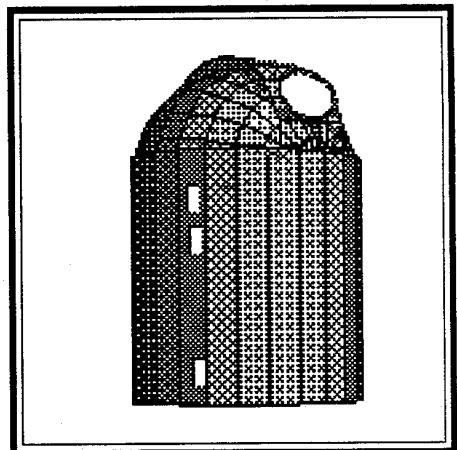
contact Jack Zeiders whose telephone number is on the credit marque. The board of directors will then select the operator.

A MENTOR PROGRAM

Gene Cisneros to sponsor
a mentor program

Gene has suggested the Association establish a list of names of qualified people who could lead small groups in telescope making, electronic drives, mirror grinding, and many other fields the members would need help and guidance in. When help is needed the mentor would be advised of the member having difficulty, call him and offer assistance. If you have special talent and time to give, please call Gene and get your name on the list. We can then publish

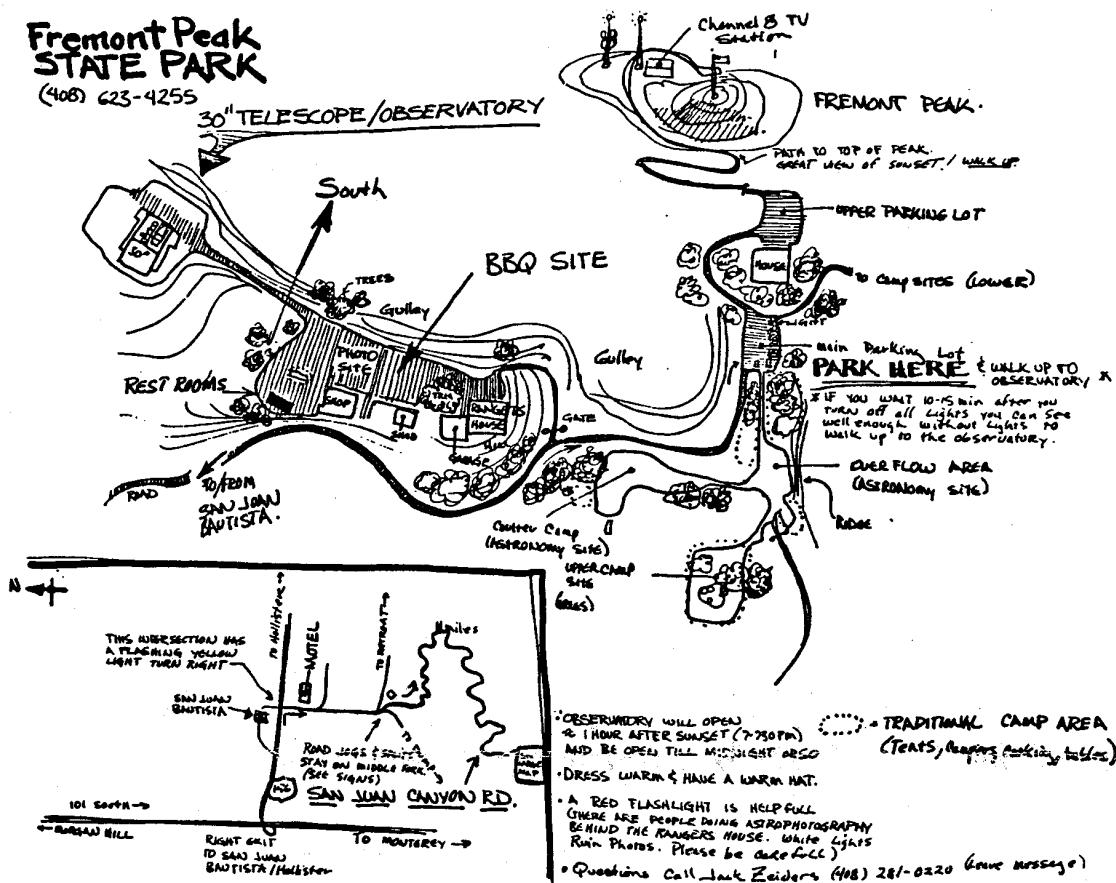
the fields and expertise in the *Ephemeris*. This subject has been discussed at board meetings, but doesn't seem to get moving. Perhaps with the membership getting behind such a project we can help others. Gene's telephone number is on the credit marque.



Fremont Peak STATE PARK

(408) 623-4255

30" TELESCOPE/OBSERVATORY



MAP TO FREMONT PEAK STATE PARK AND THE 14 AUGUST B-B-Q

PLEASE DO NOT PARK BEHIND THE RANGER'S HOUSE

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.

Televue 24 MM wide angle eyepiece - new condition - \$100 Cold Camera,

Rudy Kokich, for 35 mm roll film - new condition - \$100 Dr. Kenneth Lunan (408)-293-2218 6/93

8" Dia handmade lens, 6" Dia lens, and smaller eyepiece lenses. Call Ms. Marina Luisa Green Mond-Sun Noon till 10 PM (415) 366-2847. Allow for many rings! 6/93

Meade 8", W/Starbright coating, German Eq Mt. Metal accessory case, 26mm, 40mm, 13mm eyepieces. Piggy-back camera mount, T-ring camera adapter, and eyepiece projection

system. Great telescope at \$1200 for everything. Call Maria Petersen at (408) 262-1457. 6/93

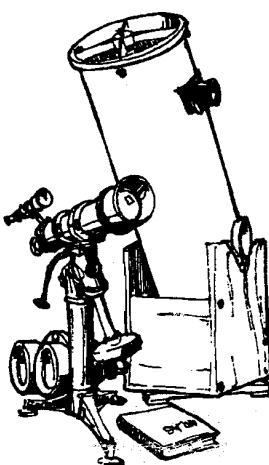
3.5 inch Questar and Linhof deluxe pan head - heavy duty tripod - each in excellent condition. Each have a carrying case. Today's cost of each is \$3145 and \$1550. Include a shipping container and camera attachment. Will sell for \$2400.

Mrs Burnadette Stubbs 11275 Chula Vista San Jose, Ca 95127 or telephone (408) 259-2193 7/93

1993 SJAA Calendar

General Meeting		Houge Park Star Party	Observational Astronomy Class
Aug	14 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



SJAA Loaner Status by Paul Barton

			Due Date
4-1/2"	Newt/P mount	David Liao	8/5/93
6"	Dobson	Bob Dow	8/6/93
4"	Quantum	Available	
60mm	Cometron Ref.	Gabriel Stoll	8/10/93
C-8	Celestron	Lee Courtney	8/24/93
12-1/2"	Dobson	B. & L. McClure	8/24/93
14"	Dobson	John Da Silvia	8/12/93
6"	Newt/P mount	Available	
8"	Dobson	John Schoenenberger	8/24/93
8"	Newt/P Mount	Chung-Lin Lee	8/4/93

Solar telescope. Available only to experienced members for special occasions such as day time public star parties, etc. Call.

(on waiting list)

The waiting list has become mixed-up (my fault) Please call again to get back on the list. Thanks - Paul

If you want to borrow a telescope call Paul Barton (number is on the credit Marque) and get your name on a general list (any telescope) or on a specific telescope list.

ASTRO ADDS Continued from page 5

TeleVue 24 MM wide angle eyepiece - new condition - \$100 **Cold Camera**, Rudy Kokich, for 35 mm roll film - new condition - \$100 **Dr. Kenneth Lunan**, 1064 Broadway Ave, San Jose, Ca 95125 6/93

Meade 8" SC 2080 LX3 w/tripod, Meade model 36 Sing/Dual axis control box, Meade Super Plossl 9.7 mm and 26 mm eyepieces, 1.8X Barlow, blue, red, polarizing filters, teliad, dew zapper, cap and shield, 45° roof prism, star diagonal metal accessory case, telescope foam box, and more. Used only 5 times. \$1000 call Rob at (408) 262-2783 7/93

ACHROMATIC OBJECTIVES 5" f/8.6 lens in aluminum cell; figured by D&G Optical - \$375. 4.75" f/4.8 lens, without a cell - \$60. 4" f/5 lens without cell - \$50. 4" f/8 (approx) lens, unknown quality and airspace, with out cell - \$25. William Cooke (W) (408) 492-45640 (H) (408) 295-6560 7/93

ZOOM EYEPiece, excellent, Orion brand. Seven elements, fully coated, very sharp images. Zoom ratio 3 to 1, from 21 mm to 7 mm (apparent field from 35° to 65°). Fits 1-1/4 inch focusers. Cost \$160 new, will sell for \$100 or best offer. Edward Hillyer (209) 931-0486 7 pm to 9:30 pm Stockton 7/93

Celestron Ultima 8 w/hand controller. All in mint condition - \$1850. Call Patrice Larson at (408) 736-2153 7/93

Ride Needed - Senior Citizen in Cupertino needs a ride to meetings. Willing to use own car, but needs someone along. George J Glumac 10411 Tonita Way Cupertino (408) 252-9266

Takahashi TSC 225 Immaculate condition with dew shield, Losmandy G11 mount, Advanced Astromaster computer. Barely used - Serious inquiries only please. John Bettencourt (408) 956-1810 8/93

FOR YOUR INFORMATION - When ordering material from *Sky and Telescope* ask for a 10% discount given to club members. Nothing else is needed

CELESTIAL CALENDAR

July 1993

Lunar Phases	Date	Rise	Trans	Set
FM 05:10hr	02-8	2010	0101	0630
LQ 08:21hr	10-8	----	0648	1406
NM 12:28hr	17-8	0621	1306	1943
FQ 02:58hr	24-8	1429	1930	----
FM 21:33	31-8	1911	0028	0619

Nearer Planets

Mercury	07-8	0447	1156	1906
1.22 AU	17-8	0524	1227	1929
Mag -2.1	27-8	0623	1306	1948
Venus	07-8	0315	1031	1747
1.21 AU	17-8	0328	1042	1756
Mag -4.4	27-8	0344	1053	1801
Mars	07-8	0947	1553	2201
2.60 AU	17-8	0936	1537	2137
Mag +1.3	27-8	0928	1521	2113
Jupiter	07-8	1050	1643	2236
6.08 AU	17-8	1019	1610	2201
Mag -1.8	27-8	0949	1538	2126
Saturn	07-8	2042	0206	0722
8.80 AU	17-8	2001	0124	0644
Mag +0.8	27-8	1919	0042	0601

SOL Star Type G2 V Mag - 26.72

RA	DEC
09:11	2232 07-8 0543 1258 2017
09:49	2107 17-8 0547 1257 2011
10:26	1912 27-8 0553 1255 2002

Astronomical Twilight Dawn Dusk
 JD 2,449,206.5 07-8 0437 - 2148
 ,216.5 17-8 0450 - 2133
 ,226.5 27-8 0501 - 2116

Sidereal Time
 Transit Right 07-8 0000 PDT=1753
 Ascention at 17-8 0000 PDT=1832
 Local Midnight 27-8 0000 PDT=1912

darkest Saturday Night Aug 14
 Sunset 2002
 Twilight End 2139
 Moon Set 1740
 Moon rise next morning 0400

times and dates are
PACIFIC DAYLIGHT
 by Richard Stanton
 Times are Local Civil
 Derivation of these values are from
Astronomy with Your Personal
Computer
 by Peter Duffet-Smith
MacEphem
 by Elwood Charles Downey

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COMET COMMENTS

by Don Machholtz

Two faint returning comets have been recovered lately. Other than that, Comet activity remains low. Don't forget the Perseid Meteor shower on the night of August 11-12, this is the result of Periodic Comet Swift-Tuttle, observable late last year.

Periodic Comet Hartley 3 (1993m): Jim Scotti of Kitt Peak recovered this comet on June 23 at magnitude 20. It has a 6.8 year orbit, and it will be closest to the sun next May at 2.5 AU, but is not expected to get much brighter.

Periodic Comet Whipple (1993n): Jim Scotti also recovered this comet. It is 18 months from a distant perihelion. It has a 8.5 year orbit and will not become visible in amateur telescopes.

Periodic Comet Shoemaker-Levy 9 (1993e): This "strings of pearls" comet, set to collide with Jupiter next July, is in a near-circular orbit. The positions below are from the latest orbit. The comet will pass behind the sun in October, we'll see it again in the morning sky in late December.

EPHEMERIS

PERIODIC COMET SHOEMAKER-LEVY 9 (1993e)				
DATE (00UT)	R.A. (2000)	DEC.	ELONG	SKY MAG
07-22	12h20.5m	-03°21'	67°	E 14.4
07-27	12h23.1m	-03°37'	63°	E 14.4
08-01	12h25.9m	-03°55'	59°	E 14.4
08-06	12h28.8m	-04°13'	55°	E 14.4
08-11	12h31.9m	-04°33'	51°	E 14.5
08-16	12h35.1m	-04°53'	47°	E 14.5
08-21	12h38.5m	-05°14'	43°	E 14.5
08-26	12h41.9m	-05°36'	39°	E 14.5
08-31	12h45.5m	-05°58'	35°	E 14.5
09-05	12h49.2m	-06°21'	31°	E 14.5

SEEKING COMETS

It has been more than seven months since an amateur has discovered a comet. This is not unusual, as a look at other amateur comet discovery "draughts" since 1975 will show absences of comet finds.

18.0 months: Mar. 3, 1976 to Sept. 4, 1977
 17.8 months: Dec. 26, 1980 to Jun. 18, 1982
 11.5 months: May 27, 1985 to May 12, 1986
 10.5 months: Jun. 18, 1982 to May 4, 1983
 8.5 months: Oct. 10, 1978 to Jun. 24, 1979
 7.7 months: May 12, 1986 to Jan. 5, 1987
 7.5 months: Jan. 6, 1989 to Aug. 24, 1989
 7.2 months: Dec. 25, 1979 to Jul. 31, 1980

With 63 visual finds during this time period, on the average a new comet would be visually discovered every 3.3 months.

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. A text file on a 3-1/2" IBM or MAC diskette is preferred, but written is accepted.

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