SJAA EPHEMERIS

VOLUME 4 NUMBER 7 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION JULY 1993

The Eye Piece

Lunatics descend on mountainside
near San Bernadino
by Jack Zeider

Or so the headline would scream if one of the tabloid programs that are proliferating on the tube were to have covered the RTMC weekend. I made the trek this year and there was a large number of BIG scopes entertaining the die hards who went though a bright first quarter moon glare that made observing difficult, increasingly so each succeeding night. We had several 24" - 30" scopes and a 40" was also there. Most of these had long lines of folks eager to look through the biggies. I had the pleasure of using a fine 12" f/6 and 24" f/5 most of Friday evening. When the moon set about it got darker but the typical RTMC seeing was in full effect. Someone described Camp Oaks as a sub-arcminute site, I think he had it right. Look for photos from RTMC at September slide and equipment night.

I received a call from Irene Wing of the Chinese Summer Festival which will be held at the San Jose Historical Museum near Kelly park on July 25th. She has requested a telescope to be setup and operated during the day for the visitors to the festival. Most of the usual gang that handle these events will be at Yosemite that weekend so we are looking for a volunteer to help out. These events are a lot of fun, you get to meet many nice people, chat about your favorite hobby, and show off your toys. Call Irene at (408) 926-1785.

Don't forget our annual picnic is coming up this August 14th at Fremont Peak. The club will provide burgers and dogs for our members, everything else is a pot luck, bring something to share and have fun. Frank Dibbell of the FPOA asks that everyone not plan on parking behind the rangers house and be forewarned of the second great super-soaker battle.

John Wright is now digging out from under the tax season business load and is going to be working hard on the SJAA/Grant Ranch Observatory proposal and project. Once things get worked out I think the public, Grant Ranch Park and the SJAA will benefit by bringing a fine public oriented astronomy facility online. Perhaps like a smaller version of the Fremont Peak program that has brought heightened awareness of astronomy and much positive public attention to that Park, we will be able to contribute to Grant Ranch and our local community as well.

July 3: No activity
July 10: General Meeting 8:00 pm at the Milpitas Library. Board of Directors Meeting 6:15 pm. Speaker Rich Combs on Eyepieces
July 17: Star Party at H. Coe or Grant Ranch, 12%Moon, Mset 19:04, Sset 20:28.
July 23/24: Star Party at Yosemite. Contact Jim Van Nuland for reservations. This is a party you must go to at least once. There are great skies! Sset 8:18; Mset 10:55 and 11:31; Morning AstronTwlite at 4:21. Friday at moon set Sagittarius will be well clear of the trees.
July 31: Seventh session of Observational Astronomy, 8pm at the Milpitas Library.
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, Houge 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 28 Eighth session of Observational Astronomy Class, 8 pm at the Milpitas Library.

Star Parties (continued from pg 4)

stars - binaries, real and visual, including the Twin's Castor and Pollux, Beta Cygnus, Alberio, Barnard's star, etc. (where does Jack find all this good stuff?)

The slide show, Jack Zeider's photos, included Bootes, Hercules, Ophiuchus, Coma Borealis, Serpens Caput and Libra.

We finished about 10:30 after and other fine session. You know, these sessions require planning and work. After the class Jack backed-up his truck to the door of the library to load in the instructional material, while Lady went for a walk after a nice sleep in her little Mustang.

Bill and Jeff's
"GETTING MOST of it TOGETHER"
by Jeff Horne

In the April SJAA Ephemeris Rich Neuschaefer gave us a fine list of items he uses to aid in observing. While this seems to work well for Rich, Bill Cooke and I have a somewhat different view of what's needed. You may want to refer back to Rich's list for comparison. Our list is generated from a decade and a half of experience at various observing sites through all sorts of great and hopeless nights.

Observing Tool List and the Stuff WE Use

Telescope Tools:

Eyepieces and Filters:

We have used the whole gambit from Naglers to Plossls. However, one of our favorites for planets is a 12.5mm Ramsden that cost 50 cents. I have an old LPR filter we use sparingly.

Finders and Diagonals:

Telrads we like, they're simple and not over priced like the high tech ones. I like a straight through finder and the stiff neck that goes with it, Bill prefers the reversed, upside down elbow finder. He can do the mental coordinate transformations that just leave me confused. A set of digital setting circles is on my "dream list", but Bill has deep philosophical reservations about such devices.

Battery:

If we don't bring the new Sears lawn and garden battery, the battery in Bill's truck works just fine for driving the 6 inch Astrophysics refractor. Besides you can always start the truck by rolling down Fremont Peak anyway.

Alignment Tools:

We use an old Coulter aluminum plug with a small hole in the center and a Ronchi screen in the top of a plastic 35mm film container. However, wandering around Fremont Peak playing the "collimation patrol" doesn't win one many friends.

Vibration Dampening Pads:

I always thought you got rid of vibration by setting up in the dirt. Actually, we both own a set of pads we bought from Kevin at a swap meet, but I can't figure out how to keep an eyepiece stuck to one of them. They do make nice coasters.

Cleaning stuff:

A camera lens brush or an old T-shirt and plenty of hot air. A can of ozone killing compressed gas works on the hard to reach areas. Windex is much better on mirrors than spit. But in a pinch you can clean an eyepiece by licking it. At Riverside we once saw someone using a condom to keep the dust out of the focuser.

Photo Equipment:

A manual 35mm with several different lenses, fast film, and a wide range of explicatives to yell at car headlights.

Tools:

We usually carry a screw driver and a big pair of pliers. If Bill takes his refractor we need some kind of allen wrenches too. Chapstick will serve as an emergency lubricant if your Dobson rocker box is too tight against the base sides. My small Swiss pocket knife works well for most things including opening chip bags, cleaning battery terminals, and carving up a burrito heated on the engine manifold.

Clothes:

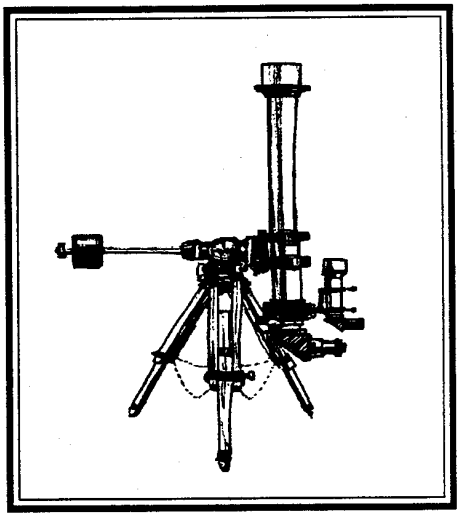
A baseball cap works well, except in the winter a pull over hat is warmer. A good jacket is nice and we always say we should buy some. Ski bibs we don't use because ours don't fit any more. Gloves are good, especially if we remember to bring them. Bill's dream method of staying warm has something to do with Paula Abul, that's another story. A sweat shirt with a hood keeps the mosquitos off of Bill. I prefer to smell like bug spray.

Food and Drink:

If it isn't greasy or sticky, we don't want it. Our standard observing food is Pepsi and little chocolate donuts (LCDs). We also have a fondness for my wife's fresh baked, still warm, crescent rolls or chocolate chip cookies. Remember to close up your food unless you like to be good buddies with the raccoons. You'll find us driving to Fremont Peak with slurpees from the 7-11 in Gilroy and maybe a bagel dog. Bill can eat and drive at the same time if I hold the wheel. We use the whole road in this maneuver so stay clear!

Other Stuff:

We both have the new Celestron red LED flashlights. Star charts are Uranometria, and Sky Atlas 2K. The new Uranometria field guide is wonderful for avoiding looking for things we can't see anyway. The tailgate of the pickup truck makes a good table, and any folding chair will do. Napkins from our 7-11 stop are good for keeping clean, and Repel 100 bug repellent adds a nice piquant spiciness to the donuts. We don't like radios as we prefer silence, or good conversation. Our taste in jokes is definitely questionable. [I'll agree to that . . . Ed]



Calico Observatory
3509 Calico Ave.
San Jose, CA 95124
(408) 371-1307
1993 May 6

Our monthly ***Sky & Telescope*** and ***Astronomy*** magazines are important means for keeping up on what's happening, astronomically speaking. Comet discoveries, supernovae, and the like would benefit from faster communication. But a subscription to the SAO Notices from Brian Marsden's office costs something like $100 a year!

Cheaper, and only a little less timely than SAO notices, are the computer Bulletin Board Systems. Other than the cost of a modem, many BBSs are free, and they are probably a local phone call, too. There are a whole lot of BBSs, but not all carry astronomy sections. Here are those that I've found in the San Jose area. Most are free, and support off-line mail reading and fast modems.

A board that has only messages from its own callers tends to be rather limited. However, there are many networks of BBSs — they exchange public messages and private mail, and so will have participants from all over the country, and some from outside the USA as well. All of the following are networked discussions.

The Higher Powered BBS, (408) 737-7040 — carries two astronomy areas, from the Ilink and SFnet networks; they are area 127 and 223. Each has about 10 to 20 messages per day. Ilink has a transcription of Sky & Telescope's current telephone news line.

Flying Dutchman BBS, (408) 286-5701 — from the RIME network, area 43, carries the daily notices from NASA, covering the shuttle preparation and on-orbit news, as well as status of various other spacecraft. Of course, there are messages from general participants, too.

Temporary Insomniac's BBS, (408) 866-0640 — also carries the RIME astronomy area (see above). Area 41.

Data Port BBS (408) 259-3019 — smaller array of message areas, but it includes the FidoNet astronomy echo. This is my personal favorite.

There is more observational discussion here than on the others, and the moderator, having a newly-minted PhD in Astrophysics, keeps the high-end physics on track (i.e., correct). About 30 messages a day.

PCS-BBS (408) 270-4085 — This is the only local board I've found that carries SCI.ASTRO, the Usenet astronomy forum, populated by folks from JPL, NASA, universities, and so on. BUSY! there may be 100 or more a day, many very large, sometimes rather specialized. Area 36.

This is a pay board, but they will allow a new caller 20 minutes to look around. Capture bulletin 11 and print it. Filled out and mailed, it will get you 15 days free access, after which they want $25/year. But it's a restricted kind of access, even at $25, unless one pays an additional $3/month for Usenet. With the free access, I can read messages on-line and capture them, but I can't get to the mail doors, so it's a bit slow. I don't know if I can post messages. All of these boards carry a bewildering variety of other discussions. I read the USRobotics forum when I was getting acquainted with my new (USR) modem. There are areas for most software packages, many hobbies, and social issues. One could spend hours every evening. Most is of fairly high quality.

Just a few words about software — all these boards have an enormous selection of programs of all kinds and purposes, some of it very good. Most is shareware (try before you register and send money), and others are free. Often, updated drivers are available for video cards, mice, etc.

With the price of 2400 baud modems down below $50, and 14,400 available at $210, BBS access is cheaper than ever. Internal versions cost somewhat less.

A very useful development in the BBS world is called an "Off-line Reader". The traditional way is to call a board, and read each message then and there, replying to some along the way. This ties up the phone lines for an hour at at time. Many boards now have a facility to package the new messages from each of your selected forums, and send them in a single, compressed file. This takes about 2 minutes of phone time.

With a program on your computer, each message is read, replies are composed, all without having to hurry. Replies are packaged into a single file. Then a second call is made to the board, and the reply package goes up in a single operation, taking perhaps a minute. This way, even when paying toll call charges, it's still relatively inexpensive.

I can supply the necessary modem program (QMODEM) and the off-line reader (SLMR) for IBM-class machines. Catch me at the July meeting.

Clear Skies,
Jim Van Nuland

The Lick 36" Refractor
by Rich Neuschaefer

I have contacted Alicia Good Assistant to the Director at Lick Observatory regarding a field trip to the Clark 36" refractor for an evening of viewing. There are two resident astronomers at Lick where one will be our host. The starting time is between 4:30 and 7:00 p.m. The size of the group can not be larger than 40 people. [This will be a large enough group. If every one views for a minute each - your second look will be 40 minutes after the last, and we all know that each one of us will spend more than a minute at the eyepiece! . . . ed] I have been advised that we can submit a list of objects we wish to see before we arrive and the our host will attempt to have them for us to view. What an opportunity for some of us to be able to use the second largest refractor in the world and with which many great discoveries have been made. I propose we limit the group size to not more than 25 which will bring the cost to $10 each. Paul Barton suggests that we car pool up to Mt. Hamilton because of limited parking space at the observatory. If you are interested contact me at home (408)-446-0975 or work (408)-285-6818.

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

DOUBLE, TRIPLE, AND MULTIPLE STARS

by Pat Donnelly

The May issue of ***Astronomy*** magazine had an article on constellation Bootis (the Herdsman), that contained descriptions of several double stars within its boundaries. I do agree that Epsilon Bootis is an exceptional double and should be observed. However, I think the article missed most of the really good doubles and triples in Bootis. Hopefully this article can be used as a supplement to the Astronomy article.

Begin your tour of Bootis with 1-Bootis (Σ1772). 1-Bootis is located about half way between Arcturus and M64. It is a true binary system consisting of magnitude 6 & 9 companions, separated by about 5". Both stars appear white to me. With the 8-inch SCT I could resolve the star into the pair with 117X. While in this area center your scope on Arcturus. Just north of Arcturus is a pretty pair called Σ1825. Σ1825 consists of magnitude 7 & 8.5 stars, separated by 5". I see these stars as both blur in color. Σ1825 is also a true binary system, and because of its nearness to Arcturus, it is a snap to find in the sky.

Due north of Arcturus near Eta Ursa Majoris is a nest of double star delights. The two most prominent pairs are Kappa Bootis and Iota Bootis. Kappa consists of magnitude 4.5 & 6.5 components separated by 13.3". This means that Kappa should be easy to resolve in just about any telescope. Near Kappa is Iota. Iota consists of magnitude 5 & 7.5 components, separated by a whole 39". Both Kappa and Iota are true binary systems, and these two stars are good doubles for beginners due to their separations. Near Kappa and Iota are a host of dimmer doubles. Included in this list are Σ1871, Σ1869, 39-Bootis, and Σ1843. All of these doubles should be resolvable in a 6" telescope under high power.

Next move down to the region of Delta Bootis. Delta is a very wide double of approximately 105". I have resolved this star with binoculars, but it is still a pretty sight in a telescope. Delta's components are magnitude 3,5 & 7:5, and the system is a true binary system. Going further south you arrive at Xi-Bootis. Xi is also a true binary system consisting of magnitude 5 & 7 components. Their separation is about 7", so they should be resolvable in a 3-inch telescope. I have seen this pair as both orange-red in color.

If you want to observe more do the list in the Astronomy article that includes Epsilon, Nu, Mu Pi and Zeta-Bootis, Σ1850, Σ1910, and Σ1835. Mu-Bootis is always a fun triple to observe under high power. Also, both Zeta and Pi-Bootis have faint companions making them observable triples. With such a long list one could spend an entire evening just observing binary star systems in Bootis.

Star Parties

by Paul Barton

Fremont Peak - Sat. 22 May 1993

This was another grand outing!! We had fine weather — clear, warm, fog - below, dark. The Milky Way looked liked a cloud. Practically all telescope spaces were taken and there were a few campers. There may have been as many as 50 telescopes, almost all different and 75 to 100 people. There was a fine sliver of moon which went down before dark. A big attraction was the super nova in M81, found by Mark Wagner, 8" Dob, Rich Neuschaefer, 18" Dob, and others. The Veil nebulae was observed using an O-3 filter, bright and clear. The viewing was near perfect for this part of the world. The sign-in sheet is far from complete, but the following is a list of some who were there.

Dolories and Terry Stiner
Mark Wagner and family
Paul and Lady Barton
Charles Chen and Patti Bossert
Aron Chew
Dean Linebarger
Jim Eiselt
Richard Navarrete
Allan Nelems
John Bettencourt
Charlie and Susan Wicks
Larry and Marty Wayne
John Kuklewicz
Rich Neuschaefer
Ron Sheldrup and Katie Peters
Mitsuaki Hirono
Bill Cook
Jerry and Jeff Horne
Dave Wright
Ken Ward
Dave and Kristen Smith
Jack Zeider

Houge Park - Fri. 28 May 1993

Another fine outing. We were lucky to get this one in as the weather was bad both before and after, but come friday evening the clouds dispersed and we had a fine view of the sky. The moon was about half (1st quarter). We had about about a dozen telescopes and at least 50 observers including many small fry. One young man helped set up and operate the JMI-18. Young eyes can pick out faint stars that require optical help for oldsters. Observed were Jupiter, Mars, the Moon, Globular clusters, M13, M5, and M92 and a few others. The sprinklers started in across the park around 10 p.m. , as we were leaving. Crazy Ed Erbeck didn't have to do his one foot rain dance standing on the sprinkler head.

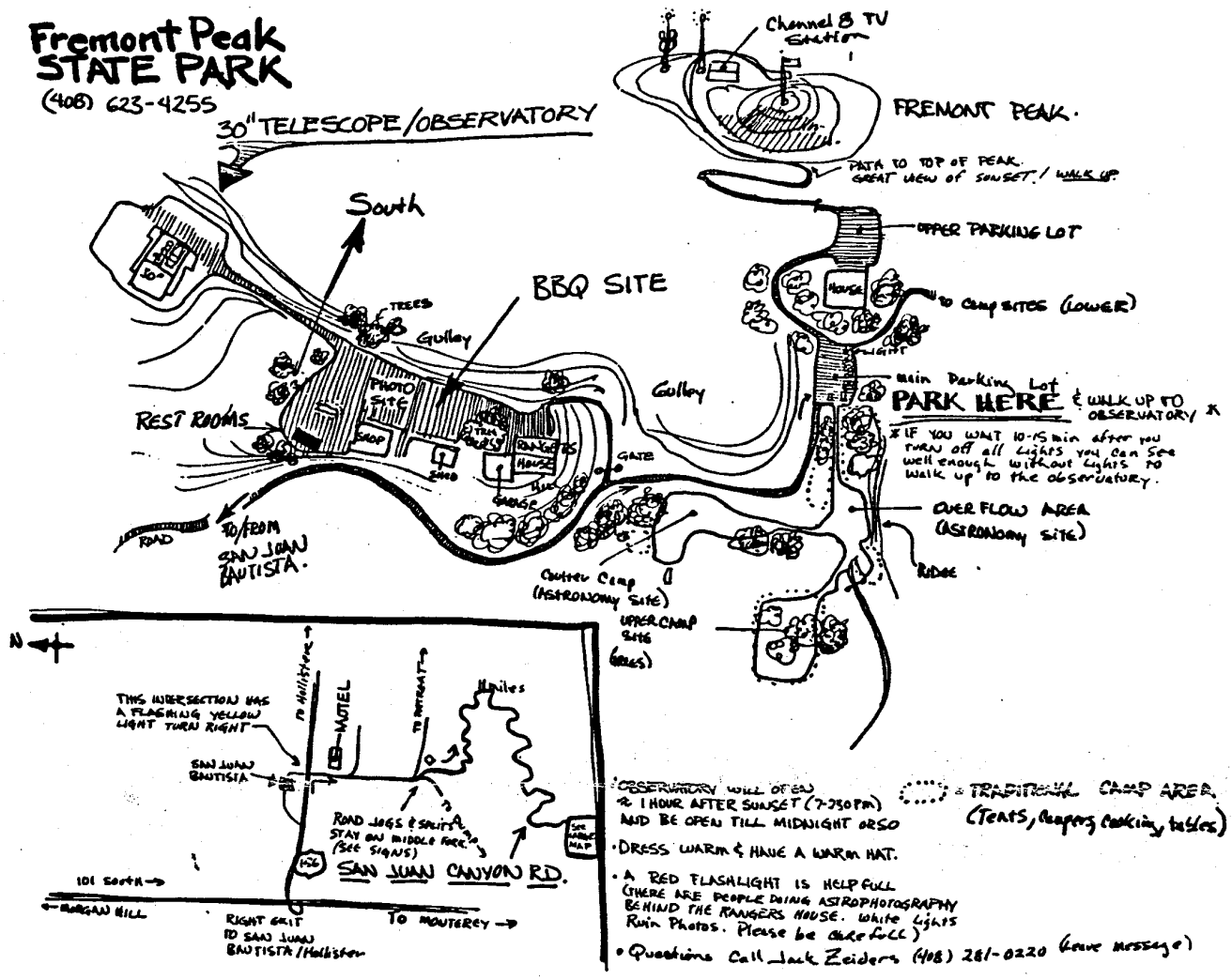
Observational Astronomy Milpitas Library Sat. 29 May 1993

The fifth observational Astronomy Class met in the Milpitas Library at 8 p.m. There were an even dozen star gazers, most of them familiar faces. Jack Petersen, the speaker, started off with a two foot photo of the moon, pointing out various features and correlating them with our "bible" — the 1993 Observer's Handbook by the Royal Astronomical Society of Canada, Roy L. Bishop EDitor. It is fantastic how much data is in this handbook.

The subject was so interesting to all of us, we stayed on it for nearly an hour, the planned subjects had to wait. We discussed lunar and solar eclipses, including annular solar eclipses. Jack has traveled to far away places and observed many fine solar eclipses. (will he be able to do this now he's "in-harness"?)

By nine o'clock we got down to business with a discussion of double

Continued on page 1



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

PLEASE DO NOT PARK BEHIND THE RANGER'S HOUSE

and More ASTRO ADDS

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 lense without cell - $50. 4" f/8 (approx) lense, 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 controler. 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

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

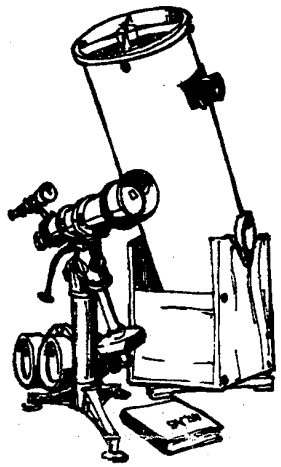
Thanks to all of the members who donated to the eyepiece fund and telescope loaner program. The loaner program is now in excellent shape for eyepieces and finders. As the loaner telescopes are returned they will be upgraded.

Paul Barton

1993 SJAA Calendar

	General Meeting	Houge Park Star Party	Observational Astronomy Class
July	10	23	31
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	Nagin Cox	7/8/93
60mm	Cometron Ref.	Gabriel Stoll	8/10/93
C-8	Celestron	John Schoenenberger	7/16/93
12-1/2"	Dobson	available - a heavy instrument call if int.	
14"	Dobson	in shop for modification	
6"	Newt/P mount	D. Petree	6/24/93
8"	Dobson	Mark Wagner	7/4/93
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)
Ken Ward	Any
J. P. Da Silvia	Any
Dave Simmons	C-8
Nagin Cox	8" Newt/P Mount

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 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. Piggie-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

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, telrad, 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

Continued on page 5

CELESTIAL CALENDAR

July 1993

LunarPhases	Date	Rise	Trans	Set
FM 16:45hr	03-7	2025	0101	0556
LQ 15:50hr	11-7	0023	0657	1337
NM 04:24hr	19-7	0625	1315	2009
FQ 20:26hr	26-7	1324	1838	2355

Nearer Planets

Mercury	07-7	0700	1351	2046
0.60 AU	17-7	0556	1251	1942
Mag +1.00	27-7	0500	1151	1844
Venus	07-7	0308	1002	1701
0.99 AU	17-7	0306	1007	1712
Mag -4.7	27-7	0307	1012	1723
Mars	07-7	0957	1629	2304
2.10 AU	17-7	0950	1614	2240
Mag +1.20	27-7	0945	1559	2217
Jupiter	07-7	1226	1822	0021
5.67 AU	17-7	1153	1748	2344
Mag -1.9	27-7	1121	1713	2309
Saturn	07-7	2237	0356	0915
8.96 AU	17-7	2156	0315	0833
Mag +0.50	27-7	2115	0233	0750

SOL Star Type G2V Mag - 26.72

RA DEC				
0707 2232	07-7	0543	1258	2017
0748 2107	17-7	0547	1257	2011
0826 1912	27-7	0553	1255	2002

Astronomical Twilight		Dawn	Dusk
JD 2,449,175.5	07-7	0402 -	2222
,185.5	17-7	0412 -	2215
,195.5	27-7	0424 -	2204

Sidereal Time

Transit Right	07-7	0000 PDT=1753
Ascention at	17-7	0000 PDT=1832
Local Midnight	27-7	0000 PDT=1912

Darkest	Saturday Night July 17
Sunset	2028
Twilight End	2215
Moon Set	1904
Moon rise next morning	0513

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

Comet Comments
by Don Machholtz

Several faint comets have been recovered, with two new ones discovered. Meanwhile, Periodic Comet Shoemaker-Levy 9 continues to draw attention.

Periodic Comet Shoemaker- Levy 9 (1993e): This strange object, the "string of pearls " comet, remains in the vicinity of Jupiter. The latest orbit calculation indicates that it was close to Jupiter (0.0008 AU from the center in July 1992. This caused the comet to split into many pieces. A year from now, in late July 1994, it is expected to get even closer - 0.0003 AU distant. Since Jupiter is 0.005 Au in radius, the present theory is that at least some of the many nuclei will collide with Jupiter itself. Predicted positions for the comet are printed below. Although the comet is faint, you may wish to attempt photographic or CCD imaging of it.

Periodic Comet Shoemaker- Levy (1993h): Carolyn and Eugene Shoemaker and David Levy discovered this comet on plates exposed through the 18-inch Schmidt at Mt. Palomar on May 23. The comet was then at magnitude 17 and is expected to remain faint as it stays at least 5 AU from the sun.

Periodic Comet Holmes (1993i): T Seki of Japan recovered this comet using photographic equipment on May 24. Already past perihelion, it will remain faint.

Periodic Comet Neujmin 3 (1993j): Jim Scotti of the Lunar and Planetary Laboratory at Kitt Peak recovered this comet on May 25 at magnitude 21. It will not get much brighter.

Periodic Comet Sajn-Schaldach (1993k): Jim Scotti also recovered this faint comet. It has an orbital period of 7.5 years but will remain beyond amateur's telescopes.

Comet Helin-Lawrence (1993l): E. Helin, K. Lawrence and M. Nassir exposed plated on the 18-inch Palomar Schmidt to discover this comet on May 17. It was at magnitude 17, but the orbit has not been completed.

EPHEMERIS

PERIODIC COMET SHOEMAKER-LEVY 9 (1993e)

DATE(00UT)	R.A. (2000)	DEC.	ELONG	SKY	MAG
06-22	12h00.3m	-03°02'	91°	E	13.6
06-27	12h02.0m	-03°09'	86°	E	13.6
07-02	12h03.9m	-03°16'	82°	E	13.7
07-07	12h06.1m	-03°26'	78°	E	13.7
07-12	12h08.4m	-03°37'	74°	E	13.7
07-17	12h10.9m	-03°49'	70°	E	13.7
07-22	12h13.7m	-04°02'	65°	E	13.8
07-27	12h16.5m	-04°17'	61°	E	13.8
08-01	12h19.6m	-04°32'	57°	E	13.8
08-06	12h22.8m	-04°47'	53°	E	13.8

Don Machholz (916) 346-8963

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UNIVERSE '93

continued from page 2

Sally Ride

David Levy

the audience with her talk and slide/video presentation about Observing Earth from Space. I was impressed by her knowledge of both the mechanics of the shuttle and duties while in space. She is a true Superwomen!

Allen Dyer, Associate Editor for Astronomy magazine, gave a comprehensive discussion on Choosing a Telescope for Backyard Astronomy. He covered the gamut from small refractors to giant size Dobsonians. He has authored several books on this subject.

I split the last session for Saturday between Gerrit Verschuur and Stephen Edberg; both popular in the field of astronomy. Gerrit, a professor at Rhodes College in Memphis, has written many interesting articles for Astronomy magazine and spoke on The Spark that Bridged the Universe. Stephen Edberg, who works for JPL and coordinated the Halley Watch during the recent apparition, spoke on Chasing and Observing Solar Eclipses, another subject dear to my heart. He covered every thing you wanted to know about eclipses but were afraid to ask.

The Sunday morning session started with Jack Newton's spectacular show on CCD Color Deep Sky Photography where he covered everything from his early days in astrophotography, mortgaging his home for a large telescope, his new observatory-home complex in Canada, and his dazzling photos with his CCD setup. He showed photos from his 25-inch telescope which rivals photographs done by Mount Wilson's 100-inch in Los Angeles. Also, by computer color calibration, showed the true colors of nebulas which have been printed wrong in astronomy articles over the past decades. Jack was one of several expedition leaders I made acquaintances with on our trip to Siberia for the 1981 Total Solar Eclipse.

Newton's talk was appropriately followed by former Astronomy editor, Richard Berry, who talked about Image Processing: The Key to Great CCD Images. The tremendous achievements in the use of CCD's to capture raw data in a matter of seconds, the removal of the system's inherent noise, and the color correction and other enhancements has improved modern day astrophotography to new levels. One of his presentation highlights was a 50-second fantasy ride to the "tropical island" of the Whirlpool Galaxy, M51. To create this video, he converted image brightness into a 3-dimensional display of large and small peaks. It looked like an island in the shape of M51 with two mountain peaks. The space ship circled it and zoomed down and through the multitude of peaks and valleys. (See S&T, Sept. 1993, pg 95).

Joe Shrock and I had planned to start our return drive to the Bay Area sometime around noon Sunday, but we chose to delay it so that we could hear David Levy's talk, The Art of Comet Hunting. I'm glad we did! The popular comet hunter, (18 to his / co-shared credit) told of how he came to discover his first comet. Ignoring rules about looking for comets with the moon up, he scanned the sky with only the music of Joan Baez to keep him company. The crescendo of his talk came when he saw "his" comet. He spoke of his excitement and emotions and how difficult it was to contain himself. He also talked about the co-discovery of Comet 1993e, better known as Periodic Comet Shoemaker - Levy, which has since been torn apart by a close encounter with the planet Jupiter and is currently a string of 17 icy beads. The big ending will come around July 23-25, 1994 when the remnants crash into Jupiter and possibly create enough of and explosion to illuminate nearby Jovian moons. I've followed several of Levy's comets across my front yard skies and I will surely watch the fireworks next July.

We did spend an additional hour looking over the more than seventy exhibit booths inside Aztec Hall and meeting the editorial staff from Astronomy magazine including Editor Robert Burnham; Associate Editors Alan Dyer, David Eicher, and Richard Talcott; and former Editor, Richard Berry. Astronomy magazine has been very good to me over the past two decades publishing some of my astrophotographs. After all this, I must conclude this was one helluva astronomical show!