SJAA EPHEMERIS

San Francisco Weather — Weird and Wacky

Jane Houston Jones

Now is a great time of the year to learn about our wacky weather and weird San Francisco Bay Area micro climates. The famous blue-legged tourist arrives in the region in droves just as our weather becomes really interesting. This species is easy to spot because of its unusual plumage. The head sports a protective seasonal cap, which quickly blows away in the fierce wind, leaving the usually sparse natural plumage bare to the ravages of the elements. The flimsy outer wear favored by the species is useless for protection, and thererfore the extremities sport a range of unnatural colors — from red peeling sunburnt shoulders to goose-bumped wind-whipped blue legs. These color variations can both be seen on the same day in different parts of San Francisco, much to the enjoyment of the local species!

Our home library contains a great little weather booklet about the San Francisco Bay region. It is tucked neatly next to our hiking, biking and geology guidebooks. It is called *Weather of the San Francisco Bay Region* by Harold Gilliam, published by the University of California Press in 1962. I decided to read it again one recent cloudy night — a night not destined to be a stargazing night, not even from our back deck in San Rafael, California.

I could see the fog cascading over Mount Tamalpais to the southwest, and the hills over to the west had foggy whitecaps on their gently rounded peaks. I turned from the window, picked up the booklet, and settled in for a nice long read. The booklet was fascinating. There have been some subtle changes

Continued on next page

Dr. Larry Lasher of NASA Ames Research Center is the project manager for Pioneer 10, the first spacecraft to venture beyond the furthest planet. At left is Dr. Lasher from the June SJAA meeting along with a 1/12 scale model of Pioneer 10. At right is Dr. Lasher near the beginning of Pioneer 10's mission! Pioneer 10 continues to operate and hopes are high that it will detect the heliopause.

SJAA Activities Calendar

Jim Van Nuland

July

7 General Meeting, 8:00 p.m., Houge Park, Greg Laughlin, NASA, "The Future of the Solar System."

13 Astronomy Class VIII, 7:30 p.m., meeting hall, Houge Park. Topic: Deep Sky Observing

13 Houge Park star party. Sunset 8:29 p.m., 46% moon rises 1:13 a.m.

14 Fremont Peak star party. Sunset 8:27 p.m., 36% moon rises 1:41 a.m.

21 Coe and Peak star party. Sunset 8:31 p.m., 3% moon sets 9:33 p.m.

27 Houge Park star party. Sunset 8:19 p.m., 58% moon sets 1:04 a.m.

August

4 General Meeting, 8:00 p.m., Houge Park, Elinor Gates of Lick Observatory

10 Astronomy Class IX, 7:30 p.m., meeting hall, Houge Park. Topic: Meteor observing.

10 Houge Park star party. Sunset 8:05 p.m., 62% moon rise 11:42 p.m.

10-11 Yosemite star parties

11 Fremont Peak star party. Sunset 8:02 p.m., 52% moon rises 0:13 a.m.

18 Coe and Peak star party. Sunset 7:54 p.m., no moon.

18 Star-B-Q at Fremont Peak

24 Houge Park star party. Sunset 7:47 p.m., 43% moon sets 11:38 p.m.

September 13-15 - California Star Party, Lake San Antonio
http://www.sjaa.net/calstar2001.html

24 Hour News and Information Hotline: (408) 559-1221
www.sjaa.net

San Francisco Weather

Continued from previous page

to the weather in the past 40 years; most importantly, we know more about the El Niño and La Niña ocean-warming and cooling phenomenon, but the basics haven't changed too much. Here are the basics from the booklet.

We can blame our weather on two mountain ranges, a river system and a big thaw. The Sierra Nevada mountain range rises 14,000 feet 200 miles inland from the shore of the Pacific Ocean. This hunk of granite intercepts the clouds and moisture laden clouds drifting eastward from the ocean. It forces the clouds to drop their burden on the mountain slopes in the form of rain and snow.

The spring thaw cascaded into ancient lakes, down creeks, waterfalls, streams and rivers. This volume of water sliced through the coast range to the sea, carving the Carquinez Strait and the Golden Gate long before San Francisco Bay was formed. A breach in the Coast Range has created a meeting place for continental and ocean air masses. The Coast Ranges themselves are divided into sub-ranges, each with its own hill-and-valley topography, creating more modifications to the basic weather and climate patterns.

Through the funnel of the Golden Gate and San Francisco Bay, the aerial forces of sea and land wage war. The battle line zigzags through the streets of San Francisco and extends in similar erratic fashion across the region. So what are we stargazers and astronomers alike to do? A better understanding of our natural air conditioning system will not make the bay area fog and clouds go away, but at least you'll be armed with knowledge. Now isn't that comforting?

The reason for the foggy zigzags is the complex topography of the Coast Range. It modifies the basic struggle between air masses of land and sea. The Coast Range in our region is a double chain of mountains running north and south — actually north-northwest and south-southeast. Between these two mountain chains lie the basin of the San Francisco Bay

The major streamlines depicted by the arrows permit the cool marine air to move inland bringing summer fog.

with the Petaluma Valley to the north and the Santa Clara Valley to the south. The western range consists of the Santa Cruz Mountains south of the Golden Gate and the Marin Hills, including Mount Tamalpais, to the north. The eastern part of the Coast Range is divided into two main chains. The Berkeley Hills are to the immediate east of the bay and beyond the Livermore and San Ramon valleys are the higher Diablo Range. It gets even more divided north of the bay by the Sonoma, Mayacama and Vaca mountains.

The pattern is also modified by large bodies of water which tend to cool their shores in the summer and warm them in the winter. The most important of these is the San Francisco Bay itself, and its various subdivisions and tributaries, including the San Pablo Bay, Suisun Bay, and the Delta. The Delta is where the major rivers of the Sierra and the Central Valley meet in an intricate network of watercourses and low islands. These geographical complexities form the land and lead to innumerable micro climates within the region — micro climates which vary from mountain to mountain, from valley to valley, and from point to point within these mountains and valleys.

The ocean of atmosphere that surrounds the earth bears down on the earth's surface. Warm air is light and rises and cold air is heavy and descends. Because cold air presses

Continued on next page

San Francisco Weather

Continued from previous page

down more heavily on the earth's surface than warm air, a cold region is a relatively high pressure area; a warm region, a low pressure area. Just as water tends to seek its own level, so air tends to equalize the pressure. Air moves from a high pressure area to a low pressure area. Winds blow from a cool to a warm place. When air rises, it expands and cools. When air descends, it compresses and grows warmer at about the same rate. Warm air is able to hold more moisture (in vapor form) than cool air. If warm damp air begins to cool off, it will reach a point where it can no longer contain its watery load and the moisture will condense into fog or clouds.

The gaps in the hills determine our local weather. On the same summer day Berkeley may be foggy and Redwood City may be warm and sunny. They are the same distance from the ocean, but Berkeley is opposite the lowest gap in the coastal hills — the Golden Gate, while a high ridge separates Redwood City from the ocean. The damp, ocean air is channeled into a streamline (a surface wind direction) by the Coast Range break at the Golden Gate. The damp air flows directly across San Francisco Bay into Berkeley. But there are many little "Golden Gates" funneling ocean weather inland along streamlines and sometimes allowing land weather to move to the coast. These weather funnels are often called onshore flows to describe the ocean to land air movement and offshore flow to describe the land to ocean movement.

One of these gaps is near Redwood City where the San Andreas fault slices through the coastal hills from the ocean and creates a low lying area called the Crystal Springs Gap. Farther north is a much lower and broader pass between Montara Mountain and San Bruno Mountain, known as San Bruno Gap. North of the Golden Gate there is a narrow gap at Elk Valley and a higher gap above Muir Woods. The Nicasio Gap rushes through West Marin near the valley created by the Tomales Bay and the San Andreas Fault. And lastly the Estero Gap in Sonoma county funnels cooling winds and fog from Bodega Bay into the Petaluma Valley. Is it any surprise why these valleys of ours are renowned for their agriculture and viticulture? Artichokes and grapes are kissed by the sun and then blanketed by the fog in this region. Everyone who has driven south of San Francisco on Highway 280, across the Golden Gate Bridge in San Francisco or north of San Francico on Highway 101 has witnessed the resulting fog fingers in these gaps.

Corresponding to these seven gaps in the western Coast Range are three in the inner range. Niles Canyon and the Hayward Pass are two of the gaps, and the Carquinez Strait, also called the "inner Golden Gate" completes the list. The same natural air conditioning system that affects the entire Bay Region also holds true within San Francisco. One gap extends eastward from the beach along the line of Geary Boulevard, making that stretch of the Richmond district breezy. Golden Gate Park lies in another gap. Its streamline extends inland between Lone Mountain and Buena Vista Peak to the downtown area and causes the wind gusts down Market Street. The largest pass through the city is the Alemany Gap immediately north of San Bruno Mountain. The wind and fog often flow from Lake Merced along the route of Alemany Boulevard reaching San Francisco Bay near Hunters Point. One branch of the Alemany Gap extends through Visitacion Valley, channeling the streamlines toward the Bayshore and around Bayview Hill to Candlestick Park, where it collides with another streamline from the main Alemany Gap by way of Hunters Point. Now you know the reason why it is so windy at Candlestick Park.

A stargazer's dream come true includes the pale golden crescent moon above and a glacier blanket of billowing fog a few hundred feet below.

These gaps determine our local weather. The fog burns off under the heat of the morning sun. The rays of the sun disappear at sunset instantly cooling the air and causing fog. As spring turns to summer stargazers yearn for warm and rain-less nights under the stars. Unfortunately this is just when Mother Nature decides to turn on the air conditioning in our region. Star seekers will need to understand these weather patterns, and plan their star nights accordingly. A hill or mountain top with an elevation of only 1500 feet may be above the fog. Sometimes a warm layer of air, known as an inversion layer, sits on top of the fog. It can often be 10 or 15 degrees warmer on a mountain top in the summertime. A stargazer's dream come true includes the pale golden crescent moon above and a glacier blanket of billowing fog a few hundred feet below. It is a dream that often does come true in our wonderful San Francisco Bay Area.

The author at a star party for a Mill Valley after-school astronomy club.

Celebrate Aphelion

Akkana Peck

Get out your heavy coats, because the earth hits aphelion (its farthest point from the sun) on the morning of July 4. Well, okay, maybe you won't actually need that coat; here in the northern hemisphere, our tilt toward the sun more than compensates for the slightly greater distance. So keep the coat in the closet, and have a cold iced beverage to celebrate aphelion!

Mars rules the southern sky throughout July. It passed its closest approach to us on June 21, but throughout July it remains closer —and therefore appears larger to us, and shines brighter at magnitude -2 — than any time since 1990, even at oppositions. And past opposition, Mars rises earlier and thus is easier to observe in the early evening.

Another bonus of this year's opposition is that Mars passes near quite a few deep sky objects; the view of Mars next to other objects can be a lovely view and a novel target at public star parties. Through July, Mars will stay fairly near the globular cluster M19.

The spring equinox in the Martian southern hemisphere was mid-June, so the southern polar cap should be prominently visible now and should shrink over the next few months. Both polar caps are a bit less obvious now, with the planet's equator pointed at us, than at recent oppositions when one polar cap or the other has been tilted toward us; and during July Mars' northern hemisphere will tilt a bit more toward us, making the southern pole still more challenging. Still, on nights of steady seeing we may be able to see the size of the south polar cap, and monitor it as it shrinks.

The planet is low in the southern sky for us northern observers, so to see detail on Mars we're very dependent on waiting for nights of steady seeing. If you want to see detail, try to look as often as you can, so you'll catch steady nights when they happen. I've heard early reports of local observers being able to see hints of the Tharsis volcanos and bits of Valles Marineris, as well as the usual large albedo features like the dark features Syrtis Major, Acidalia, and Margaritifer, and light features like Hellas, Chryse and Xanthe. Sinus Meridiani seems darker and more prominent than it was in the last opposition; perhaps this will be a good opposition to look for the "eye of Mars", a part of Meridiani which looks like a human eye). It will be well placed in the early evening in the first few weeks of July. As the month progresses, the difference in Mars' day and our own will gradually bring Syrtis Major and Hellas to early-evening visibility, and then, by month's end, we'll start to see Olympus Mons and the Tharsis area (the volcanos themselves are usually not visible from here, but often one can see orographic clouds or other atmospheric features caused by the volcanos, changing from day to day as the Martian weather changes).

Another bonus of this year's opposition is that Mars passes near quite a few deep sky objects.

Mars isn't the only planet near opposition. Neptune, in Capricornus, reaches opposition on the night of July 29, at eighth magnitude, easily within reach of binoculars. Brighter Uranus, in the same constellation, won't reach opposition until the middle of August, while faint Pluto, joining Mars in Ophiuchus, was at opposition last month and is now ideally placed for observers tired of bright Mars and looking for a fainter planet to observe.

About 3 a.m., the morning planets begin to rise: Venus and Saturn, joined later in the morning sky by Mercury. Venus shows a gibbous disk, shrinking as the month progresses, while Mercury begins July as a crescent but waxes rapidly toward greatest elongation on the 17th, to become nearly full (and difficult to locate in the sun's glare) by month's end. Halfway through the month, Jupiter pulls away from the sun to join them in the predawn sky.

The crescent moon will make nice groupings with the morning planets for several days late in the month. On July 18, it passes between Saturn and Jupiter, and a day later, use it to locate Mercury well below Jupiter in the twilit sky. But the real show happens a few days before that, during daylight on the morning of July 17, when the crescent moon passes in front of Venus. The planet will disappear behind the bright limb of the moon at about 10:08am, reappearing from behind the dark side at around 11:42. The event should be visible in binoculars or even to the naked eye for people with sharp vision; in a telescope, the size of the Venusian disk means that disappearance and reappearance will take a bit over half a minute, giving plenty of time to watch the event and perhaps to share some views. This might be a good chance to interest your coworkers in astronomy — take a telescope to work, or to a favorite lunch site!

Upcoming SJAA Meeting Programs

September — Slide/Equipment night
October — Jeff Moore, NASA
November — Robert Naeye, ASP, the Chandra X-Ray Observatory

School events:
Oct. 16 — Working, SE San Jose
Oct. 19 — Working, N. San Jose

Walking On The Moon

Dave North

I'm drawn to volcanism, perhaps because of so much collateral exposure from reading about the way the Moon formed.

Or maybe it's just that whenever there's a volcanic feature in a National Park, it's the Devil's Legoland or some such stupid name.

Lassen is no exception, but I'll spare the gory details — the main subject is simply called the Cinder Cone, which is a great name for it!

Cinder cones are all over the place on the Moon, so this was a chance to walk on a similar feature without the price of a lunar ticket.

You wanna see the Moon close up and cheap, go to volcano parks!

It's easily reached in a short day from San Jose, but you Hawaii members will have to pick out a local one to inspect instead...

Lassen's cinder cone is a real oddball. For one thing, it's close to symmetrical, which makes it very lunar in nature. But that's rare on earth!

Why? The prevailing wind usually deposits more ash on one rim of the crater than the other, building it up. So most look like a conic section was sliced off-horizontal.

Best guess is there wasn't much wind, so it mostly just built itself up evenly.

Another oddity is the structure of the central crater: it's a double! Apparently the cone erupted, stopped, and rerupted a bit less violently. This is particularly neat to see, and unique in my experience (though probably not all that uncommon).

Before we get too technical, I'll dwell a bit on the magnificence of being atop this structure: it's incredible.

It pokes up above just about everything nearby, and presents Lassen Peak from a particularly good angle. The flows and ash falls around the cinder cone are spectacular, both in their hummocky form (very Moonlike!) and incredible range of colors (very unMoonlike. The colors are oxidized iron for the most part, and there just isn't oxygen on the moon. Consequently, it's one of the more color-starved places in the solar system).

It's windy, as are most peaks that jut above surrounding territory. At times, the air can toss you around a bit.

Getting atop it gives you some idea how steep the sides are: it's a very tough climb. In fact, when you first see the path, you have trouble believing such a steep trail exists in a National Park (and then you remember the climb to the top of Lassen Peak — oh yeah).

The cone can remain so steep for so long because, ironically, it's so porous. Rather than being eroded by rain, the water just soaks right in and down before it can form streams or even runnels. In places, I'd swear the sides ascend at an angle greater than 45 degrees, which hardly seems possible, but my impromptu arm-protractor gave such a result.

Before we get too technical, I'll dwell a bit on the magnificence of being atop this structure.

I couldn't help but wonder how similar some of the cinder cones on the Moon might be: if they were equally steep, they may well still be, with no erosion at all save for the "grooming" from dust and small particles hitting the moon.

The surface is surprisingly smooth and crunchy, but not powdery.

And dull black as only basalt can be. In that regard, I think it probably gives a fair lunar impression. And that could get oppressive after a while — at least when there is contrast present.

Looking from the bland cinder cone to the bright terrain surrounding it makes the environs seem, if anything, more brightly painted than they otherwise might impress.

I have no idea how long we spent up there, maybe something on the order of an hour. We circumnavigated the cone, then walked down to the second, interior, cone and considered the cairn at the bottom.

The sides are *steep*! Whenever a larger stone lets go, it rolls further than little pebbles. The largest make it to the bottom, both on the outside of the cone and the inside.

Outside, they are lost in the general rubble, undergrowth and ash. But inside, there is nothing but a pile of stones in the middle of the inner crater! It's a neat effect, and a great example of mass wasting (movement of rocks and soil without an obvious erosional effect. Winds play a small part, and temblors probably play the largest part. In recent eons, most shakers on the Moon were probably caused by impacts, large and small).

So, even here on Earth, it's possible to get a pretty good look at some lunar features.

To — by proxy — walk on the Moon.

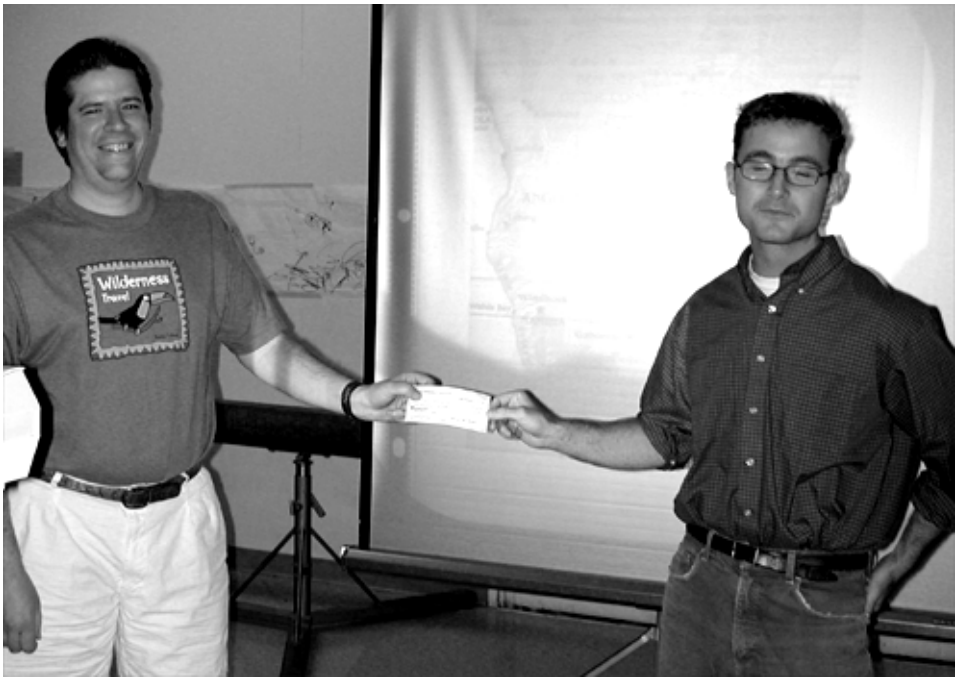
Greg Laughlin Speaks at the July Meeting

Bob Havner

Greg Laughlin, a Research Scientist at NASA Ames Research Center, will be giving a talk entitled "The Future of the Solar System." Greg works on numerical simulations of planet formation and evolution, and maintains a long-standing interest in the extremely distant future. He has written a popular-level book: *The Five Ages of the Universe - Inside the Physics of Eternity* with Fred Adams, and has discovered a planet around the nearby star HD 20675.

July 7th, 8:00 p.m., Houge Park Meeting Hall.

SJAA Contributes to "Under African Skies" Education Program



SJAA President Mike Koop presents a donation check to Kevin Hand, graduate student at Stanford University. At the June meeting, Kevin made a brief presentation on his program "Under African Skies." As this goes to press, Kevin is beginning his five-week trek from Johannesburg to Nairobi visiting schools to talk with teachers and students about science, technology, and peaceful uses of outer space. For more information visit http://www.cosmoseducation.org/about/team.html

Directions to Houge Park

Houge (rhymes with "Yogi") Park is in San Jose, near Campbell and Los Gatos. From Hwy. 17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy. 85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

Between the parking lot and tennis courts is a strip of grass where public star parties are held. The meeting hall is directly ahead (south) of the parking lot. There are restrooms on the other side of the the hall.

For directions to observing sites commonly used by SJAA members, visit the SJAA web site: http://www.sjaa.net/directions.html.

Donation

Patty Winter, sometime SJAA member and co-editor of the Ephemeris (1980), has donated a number of astronomical magazines. There are 141 issues of Sky & Telescope, mostly 1980's; and 27 of several other titles. Also three tee-shirts with astronomical / space themes. They can distributed at schools, or sold at the November swap. SJAA thanks Patty for this donation.

Celestial Calendar July 2001

Richard Stanton

Lunar Phases:		Date	Rise	Trans	Set
FM	08:04 PDT	05	21:50	00:43	04:28
LQ	11:45 PDT	13	00:39	06:48	13:10
NM	12:44 PDT	20	04:16	12:58	21:34
FQ	03:08 PDT	27	14:02	19:20	00:08

Nearer Planets:				R. A.	Dec.
Mercury, 1.02 A.U., Mag. -2.4					
07	04:33	11:43	18:54	05:36.9	+19:58
17	04:34	11:53	19:13	06:24.9	+22:06
27	05:12	12:32	19:52	07:42.2	+22:10
Venus, 1.00 A.U., Mag. -4.6					
07	03:04	10:07	17:11	04:00.7	+17:54
17	03:03	10:14	17:25	04:46.5	+20:00
27	03:06	10:22	17:39	05:34.3	+21:23
Mars, 0.49 A.U., Mag. -2.0					
07	18:29	23:00	03:36	16:58.1	-26:51
17	17:46	22:17	02:52	16:53.3	-26:50
27	17:08	21:39	02:14	16:54.8	-26:51
Jupiter, 6.02 A.U., Mag. -2.0					
07	04:38	11:59	19:21	05:54.4	+23:09
17	04:08	11:30	18:52	06:04.0	+23:10
27	03:38	11:00	18:21	06:13.4	+23:09
Saturn, 9.78 A.U., Mag. +0.8					
07	03:28	10:38	17:49	04:33.2	+20:14
17	02:52	10:03	17:14	04:37.8	+20:23
27	02:17	09:28	16:40	04:42.0	+20:30

SOL Star Type G2V Intelligent Life in System ?

Hours of Darkness

05:33	07	05:51	13:13	20:34	07:06.0	+22:34
05:51	17	05:58	13:14	20:30	07:46.7	+21:11
06:14	27	06:05	13:14	20:22	08:26.5	+19:11

Astronomical Twilight:		Begin	End
JD 2,452,097	07	03:59	22:26
107	17	04:09	22:18
117	27	04:21	22:06

Sidereal Time:

Transit Right Ascension at Local Midnight

07 00:00 = 17:53

17 00:00 = 18:33

27 00:00 = 19:12

Darkest Saturday Night: 21 July 2001

Sunset	20:17
Twilight End	22:14
Moon Set	21:38
Dawn Begin	04:14
Hours Dark	06:00

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SJAA Loaner Scope Status

All scopes are available to any SJAA member; contact Mike Koop by email (loaner@sjaa.net) or by phone at work (408) 473-6315 or home (408) 446-0310 (Leave Message).

Available Scopes

These are scopes that are available for immediate loan, stored at other SJAA members homes. If you are interested in borrowing one of these scopes, please contact Mike Koop for a scope pick up at any of the listed SJAA events.

# Scope	Description	Stored by
1	4.5" Newt/ P Mount	Tim Roberts
10	Star Spectroscope	Steven Nelson
13	Orion XT6 Dob	Li Chung Ting
15	8" Dobson	Daron Darr
19	6" Newt/P Mount	Ilkka Kallio
24	60mm Refractor	Al Kestler
32	6" f/7 Dobson	Sandy Mohan

Scope Loans

These are scopes that have been recently loaned out. If you are interested in borrowing one of these scopes, you will be placed on the waiting list until the scope becomes available after the due date.

# Scope	Description	Borrower	Due Date
6	8" Celestron S/C	Craig Scull	8/17/01
8	14" Dobson	Jack D. Kellythorne	7/13/01
11	Orion XT6 Dob	Raghu Srinivasan	6/16/01
16	Solar Scope	Bob Havner	9/2/01
27	13" Dobson	Gene Schmidt	6/30/01

Extended Scope Loans

These are scopes that have had their loan period extended. If you are interested in borrowing one of these scopes, we will contact the current borrower and try to work out a reasonable transfer time for both parties.

# Scope	Description	Borrower	Due Date
2	6" f/9 Dob	John Paul De Silva	?
3	4" Quantum S/C	Hsin I. Huang	9/15/01
7	12.5" Dobson	Bruce Horton	8/10/01
9	C-11 Compustar	Paul Barton	Indefinite
12	Orion XT8 Dob	Michael Koop	Repair
21	10" Dobson	Ralph Seguin	Repair
23	6" Newt/P Mount	Dennis Hong	7/28/01
26	11" Dobson	Robert Morgan	9/2/01
28	13" Dobson	Michael Dajewski	9/2/01
29	C8, Astrophotography	Doug Graham	6/18/01
31	8" f/8 Dobson	John Templeton	5/16/01

Waiting List

8" Sky Quest: Gordon McClellan, Dennis Hong, Joe Fragola, Robert Morgan. 4" Quantum: Eric Anderson

Submit

Submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to ephemeris@sjaa.net.

To subscribe to or unsubscribe from the SJAA Mailing List, visit http://www.sjaa.net/mailman/listinfo/sjaa-announce

San Jose Astronomical Association Membership Form

New __ Renewal __
Membership - $15
Junior (younger than 18 years old) - $6
Sky and Telescope - add $30 to membership
(Sky & Tel will not accept multiyear subscriptions)

Make checks payable to "SJAA"

Bring this form to any SJAA Meeting
or send (along with your check) to

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San Jose, CA 95159-8243

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