SJAA EPHEMERIS

The Celestial Tourist
On Location...
Jay Reynolds Freeman

So many pieces of history are places you can visit. The United States aircraft carrier Hornet, CV-12, now decommissioned and moored on the east shore of San Francisco Bay, recovered the Apollo 11 crew. For the thirtieth anniversary of Eagle's landing, the Hornet museum hosted a week-long Moon Fest, with exhibits, speeches, and memorabilia. They had star parties, too, on the flight deck. Well, where else?

To build an aircraft carrier, make an enormous hull, top it with a long, narrow hanger, and paint runway stripes on the roof. Hornet's 857-foot, 41,000-ton bulk towered over Alameda Point, yet the visitor's gangway opened onto cavernous empty space. You could fly an ultralight aircraft down the hangar deck. Stray pigeons flew in and had trouble finding their way out.

Aviation displays echoed history. Near the bow, a Grumman TBF Avenger, wings folded, spoke of the Pacific theater in World War Two. A Korean-era North American FJ Fury — I couldn't tell whether it was a -2 or a -3 —stood half cannibalized on the flight deck. A Chance Vought Crusader — the type flew both as F8U and F8 — hinted of the Tonkin Gulf Yacht Club and the unloved war in Vietnam. A carnival-ride style simulator gave passengers a taste of the maneuvering envelope of an F-14, but the lines were too long for me. Besides, it looked as if it didn't even pull negative gee.

I am not sure which Apollo exhibits were permanent and which were borrowed for the Moon Fest, but there were plenty. One was hilarious. Local dealers of Saturn automobiles helped sponsor the event, and displayed a new car, no doubt hoping glamour would rub off, from the other Saturn, that weighs as much as a light cruiser and has engines powerful enough to lift itself into the sky. I have seen a real Saturn in operation, and I don't think so. Think lightning versus lightning bug. Think thunder versus blowing your nose.

Other Apollo exhibits told of spacecraft and missions, operations and achievements. Their lines were long, too, but I did not enter for a different reason. Been there. Done that. I don't wear T-shirts — my

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SJAA Activities Calendar
Jim Van Nuland

September

3 Houge Park star party. Sunset 7:32 p.m., 36% moon rises 1:13 am.
4 Star party Fremont Peak. Sunset 7:30 p.m., 26% moon rises 2:09 am.
6 Labor Day
11 Star party at Henry Coe, Fremont Peak. Sunset 7:20 p.m., 6% moon sets 8:42 p.m..
17 Houge Park star party. Sunset 7:20 p.m., 53% moon sets 0:16 am.
18 Observational Astronomy class. Houge Park, 8 p.m.
25 General Meeting at Houge Park, 8 p.m., Slide/Equipment night

October

1 Houge Park star party. Sunset 6:50 p.m., 50% moon rises 0:04 am.
2 Star party Fremont Peak. Sunset 6:48 p.m., 39% moon rises 1:04 am.
9 Star party at Henry Coe, Fremont Peak. Sunset 6:37 p.m., 2% moon rises 8:12 am.

October (Continued)

15 Houge Park star party. Sunset 6:30 p.m., 36% moon sets 10:55 p.m..
16 Possible Observational Astronomy class, Houge Park, 8 p.m.
23 General Meeting at Houge Park, 8 p.m.. Speaker to be announced.
29 Houge Park star party. Sunset 6:12 p.m., 65% moon rise 10:57 p.m..
30 Star party Fremont Peak. Sunset 6:11 p.m., 54% moon rise 11:59 p.m..
31 End of Summer time. Set clocks back 1 hour, and apologize to your honest sundial.

Speaker schedule:

Nov. 20 - Dr. Ken Croswell will tell about his newest opus: *Magnificent Universe*, a follow-on to Timothy Ferris' *Galaxies*.

Dec. 18 - TBA

24 Hour News and Information Hotline: (408) 559-1221
http://www.seds.org/billa/sjaa/sjaa.html

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U.S.S. Hornet Moonfest

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California neck chains don't hang well with them — but I still have the battered attache case that carried my books and papers through graduate school, decorated with the esoteric snoopy-in-space-helmet decal and the larger emblem of the Apollo-Soyuz Test Project. And I have memories.

Refractor Red seemed nervous as I set up ten meters forward of the island. I couldn't blame the tiny 55 mm telescope: From its Japanese point of view, Hornet was the foe in mythic proportions. I told it not to worry — its fluorescent red paint, pure high-tack California kitsch, made a great disguise.

The deck of a ship seemed strange for astronomical observation, but in sheltered water at pier side, Hornet was rock steady. At 110x, there was no sign of any motion in the eyepiece but the Earth's rotation.

We fretted about weather. Low clouds and scud topped the northern hills of the San Francisco Peninsula, and the breeze threatened to bring them across the Bay. I worried about salt air, too, but saw no film of salt crystals and tasted none on my lips. The flight deck is several stories up, which helped.

The telescopists were mostly from Chabot Science Center or the Eastbay Astronomical Society. Some were doing solar work, but I turned my telescope east, and caught the Moon a few minutes clear of the horizon. How strange to view it from the footsteps of its first returning explorers. Haze above the hilltops parted like the mists of time, as I peered at the gibbous disc, saw again the places where human beings reached another world, and remembered.

I had just finished David Harland's new book, Exploring the Moon (Springer, 1999). Harland put the pieces of the Apollo science program together superbly, telling how knowledge of Lunar geology grew from mission to mission, and how that knowledge was used by planners in advance, and by Mission Control and the astronauts in real time, to select sites, tasks, and samples. Yet camera footage shown in Hornet's hangar deck, shot over Armstrong's shoulder in Eagle's power descent, brought another reality into focus. I was an active pilot in 1969, but did not have my instrument rating yet, so I did not fully realize what that landing entailed.

I have seen a real Saturn in operation .... Think lightning versus lightning bug.

Occupied with glitches, sight restricted by the Lunar Module's few ports and steep approach trajectory, Armstrong acquired visual reference to find Eagle coming in long. Any landing would do, but the overshoot terminated in the boulder-strewn crater that marked the west end of the planned touchdown ellipse. A turn was impossible — sun glare would be blinding. There was no visibility back and down, so he overflew the rocks, burning propellant, looking for a flat spot, while Aldrin stayed focused on instruments and called out key readings. With a suitable location found, and fuel getting scant, he started final descent, and then the outside went away! Dust kicked up by the descent engine put Eagle's crew back on instruments. With seconds on the fuel gage, descending over rough, alien terrain in a vehicle with the natural stability of a beach ball on ice, Armstrong was flying blind.

When the contact light lit, they shut the engine down and let the spacecraft fall the last meter or two — it wouldn't do if the operating engine hit the surface and chuffed, or hit a rock and blew up. Yet it wasn't over. If the LM put one foot on an unnoticed hill or hummock, it might start to tip over, leaving little time to start the ascent engine and abort, lest conveyance and monument to success become a tomb.

Armstrong nearly died in a trainer for the LM, a Wiley-Coyoteish contraption resembling a bed frame with a downward-thrusting jet engine attached. It lost artificial stabilization and pitched forward, scarcely ten meters up. He hit the zero-zero ejection lever just in time, as the thing nosed nearly straight down. I wonder if that moment was in his mind as Eagle settled through the dust to roost.

The Sun rode high as Refractor Red peered down. I could just see the arc of smallish craters, that extends north from Sabine and Ritter,

Apollo 11 spacecraft Command Module hoisted aboard U.S.S. Hornet

west of the landing site. Observers with larger telescopes spotted Moltke. Somewhere between, a laser reflector stares goggle-eyed amid dust-strewn footprints and silent instruments. A fat, robot spider casts short shadows in the blaze of day. No dust stirs. An outpost of Earth rests in tranquillity, under the midnight sky.

My favorite mission was Apollo 15, the last with more than a smattering of live network coverage. The scenery at Hadley Base was truly spectacular. Anyone who glanced at a topographic map of Luna could see one reason why they had come, to seek a hunk of deep, primordial bedrock, turned and exposed billions of years ago, in the cataclysmic aftermath of the titanic impact that produced the Imbrium Basin. Next time you see a duffer chip a divot on a golf course, next time you watch a cook fold an omelet or splat the yolks on frying eggs, think on how the Lunar Apennines came to be, if you dare.

From Hornet's deck, the terminator had cleared Archimedes. I could see hints of topography in Copernicus, but the Apennines had merged into the splashy monochrome graffiti of the full Moon albedo map. No matter, this place I know. Many times I have used larger telescopes to trace the twisting thread of Hadley Rille between mountain masses, located St. George crater, and identified features in the eyepiece, that I first saw clearly in the sweep of Dave Scott's TV camera. No optical system has shown Apollo hardware on the Moon to a visual observer on Earth, yet an earthbound amateur with a good telescope can look skyward through clear, stable sky, and recognize features and landforms that appear in photographs returned from the Lunar surface.

Harland's book also brought home an oversight of amateur observing. When we look at Luna, we spend most of our time seeking topographic detail near the terminator. It's easy to see, and spectacular. Yet there is more to the Moon. Topography shows large-scale processes, like cratering, secondaries, and basin-filling, whose succession gives the sequence of events in Lunar history, if not the actual times. Yet topography tells little about what the Moon is made of. It provides few clues to the Moon's composition.

Don't get me wrong. If we hadn't come back with samples, or at least done remote-sensing from vehicles like Lunar Prospector, then for all we'd know, the Moon might be Gorgonzola. Yet there are clues, visible from Earth, about the small-scale physical structure of the Lunar surface, and perhaps even about its chemical makeup. I can see them with Refractor Red.

I'm talking about albedo, and how it changes with the angle between observer, Moon, and Sun. In a few places, I may even be talking about color. Harland reported that mission planners, Command Module pilots in low orbit, and LM crews on the surface, kept noticing subtle nuances and variations in color, brightness, and texture, and how they changed with sun angle, and correlating them with the chemistry of similar samples that had been analyzed on Earth.

Dust kicked up by the descent engine put Eagle's crew back on instruments.

I steered Refractor Red out of the shadows at the terminator, to the fully-illuminated Lunar disc. There was much to see. We think of the full Moon as stark black and white, as if there were only two levels of intensity. Yet there must be fifty, and they vary in systematic ways, with both geography and sun angle.

Ray systems are more obvious at full Moon. Tycho is the classic, but with Refractor Red I noticed little Proclus, not far west of Mare Crisium, unremarkable at low sun, now casting bright rays over stark mare material. Some crater rims, too, look like rings drawn with chalk when the Sun is high. Stretching west and a little south of Mare Crisium was a chevron-shaped patch of relatively level terrain, more or less encompassing Palus Somni, with an intermediate gray hue. Mare Tranquillitatis and Mare Serenitatis were generally dark, but not uniformly so — parts near the edges seemed systematically blacker than the centers. I spotted a small, particularly ebony patch on the east side of the common border between these two basins. The pattern of bright and dark splotches looked oddly familiar, so I fussed with my atlas, trying to identify craters with no shadows to define them, then realized I had picked out the Apollo 17 landing site, near Littrow in the Taurus Mountains. Hmm. Somehow I doubt that is a coincidence.

I have little more to say, so far. I have been observing long enough to have had Luna in the eyepiece more than a hundred times. I can name and recognize plenty of features without a map. Yet I doubt I have spent twenty minutes total, carefully observing that part of the Moon in full sunlight with a telescope. I am fond of saying, "If you don't look, you don't see." I have been hoist by my own petard.

Seventeen was the last Apollo lunar mission. Four more spacecraft flew, but they seemed wasted on flights to low Earth orbit. Three supported Skylab, the first US Space Station. The last, in the Apollo-Soyuz Test Project, carried the astronomy instrument that gathered my doctoral thesis data, and gave me the chance to meet astronauts, to ascend the gantry and work on a space ship, to watch the lift-off close enough to feel my intestines shake, and to sit in Mission Control as our results came back. We were pleased that a mission that seemed

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all politics did some science, yet the Soviet-American cooperation in space that began then lives on now, in the International Space Station. Cold war veteran Hornet is probably as bothered by that as by my exquisite Japanese telescope. The world is full of surprises.

And what of the Moon? Will tomorrow's school children learn about Neil Armstrong with Leif Ericsson, in a unit on voyages that came to nothing? Will the next Lunar explorer speak a language unknown, represent a culture unborn, and operate a vehicle as far from Columbia and Eagle as they were from the gnarr or the longship? Will some future traveler come upon the artifacts in the Sea of Tranquillity by surprise, not knowing such a thing could be? Or will they rest alone till micrometeorites and thermal cycling have done their work, and only a local irregularity in composition of the regolith remains as the Sun expands off the main sequence, to obliterate Earth and Moon alike?

The world is full of surprises. In his last chapter, Harland presented a familiar notion, that because of Apollo and the Moon race, twentieth century space programs ran backward, from Lunar exploration, to space stations such as Skylab and Mir, to reusable orbiting vehicles like Shuttle and Buran. He elaborated, that if we had done things the other way round, the Moon landings would now be about to occur, and would not be seen as an end, but a beginning. He suggested that Apollo was an anomaly, science and engineering of the twenty-first century snatched miraculously from beyond tomorrow, a thing before its time.

That's a good thought. For if so, then when we look at the Apollo program, we look not into the past, but into the future. We see not a memorial to where we have been, but a vision of where we will yet go. We have not memories, but hopes and expectations. We yet have dreams.

I hope that some time in the twenty-first century, astronauts will again travel to the Moon. I expect they will visit some Apollo sites. I know not what history will say about Apollo, but I suspect what the newcomers will say. Their gaze will traverse the tattered metal foil dangling from the gawky LMs, and linger on the toylike Moon Rovers, coated with dust and patched with duct tape. They will cock their heads, raise an eyebrow, and say to themselves, with something between disbelief and reverence, "They did that ... with this?"

Hornet's deck, where the travelers returned to the warm seas of Terra, was the best place on Earth to celebrate a major anniversary of the Apollo 11 landing.

I hope some participants in the original Apollo project are still alive to answer them. I can guess what they might reply.

"Yes. That was us. We did that. And welcome, welcome back! But what kept you? Where've you been? Why did you take such a long time to return?"

So many pieces of history are places you can visit. Hornet's deck, where the travelers returned to the warm seas of Terra, was the best place on Earth to celebrate a major anniversary of the Apollo 11 landing. Yet I know a better place, on a different kind of sea, on another world. I dream that some future anniversary will be celebrated there. I'd give a lot to attend that star party.

Mooning

Dave North

As I write this, I have no idea how last month's eclipse went for our various club travellers. We have to produce articles for the Ephemeris almost a month before they hit your mailbox, so things sometimes seem out of whack.

I'm pretty sure it happened, and hopefully someone from around here saw it.

Meanwhile, we're back on the hunt for Orientale, at least briefly.

Another thing I don't know is how well the August apparition went —July was something of a disappointment and September's showing has similar numbers.

Still, the July sky was both nervous and wet, so who knows? Maybe the same kind of libration and terminator will give a good view this time. The numbers work out slightly better this month, and it only takes a minute, so...

Be armed and ready a couple of hours past sundown on September 24. The terminator will slowly be revealing more of Orientale most of the night, but I suspect the best window will be from about 9:30 p.m. until about midnight. This may work out for just about any location in the U.S.

As usual for these events, the declination will be a little low (about -4 degrees) but that will be an improvement over both July and August. Might mean a bit steadier views, anyway.

We did manage during the July showing to home in on the Big Weird Mountain, and it turns out it has no name on any charts that were handy, which is actually good! I can keep calling it the Big Weird Mountain.

There is a short lesson to be learned from this whole thing, though. A couple of rules that run contrary to rumor:

1. There is always a terminator, even at "full" moon.

2. Some things are best seen at

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full. Especially polar features and anything that sits near the limb, or is in a libration zone.

So don't worry too much about the meepers who complain about the full moon, then look at you like you're nuts while you drag out your scope.

They don't know nuttin'.

One question that comes up now and again is: how long do you look at The Moon in any particular observing session?

So far, the answer is between one minute and about six hours. Neither is common, and one minute would be far more usual than six hours.

A typical short session will be early in the month, when there isn't much to see other than the crescent through binoculars, or perhaps Mare Humboldtianum as a splotch. I look, grin, and do some double stars.

Another short session might be on a night when the seeing is awful. When that happens, a good low-power view is about it.

Then again, sometimes the seeing is incredible and The Moon is high, and there's plenty of time. These sessions can be a bit harrowing at time, especially for the squirrels in the back yard.

A stint at the eyepiece, a few notes jotted down, look again, race to get that other atlas that show what this might be or that... look again... the phone rings... a curious detail that needs a quick sketch for later reference... look again... setting up another scope or two for more aperture, or better tonality, or... etc.

There ain't no rules. We're just doing this for the fun of it.

Meteoric Intermission

David North

September is pretty much a bust for meteor watchers, except for the early morning hours of the very first day.

The Alpha Aurigids have their peak activity in the early morning hours (just before dawn) on September 1. Rates are usually low for this shower except for a period of about one hour.

Probably not something to get up for, but maybe set your alarm for about 3 a.m. and watch until the sun comes up. When this shower shows, its spectacular... but it's anyone's guess what year or where it will "blow."

Other than that, wait for next month.

The Shallow Sky

Akkana Peck

Jupiter returns to our skies this month, rising around 10 p.m. at the beginning of the month, with Saturn less than an hour behind it. Even low in the sky, both planets are a joy to observe; Jupiter's moons, and the festoons in its bands, offer plenty of detail to telescopic observers, and Saturn's generous ring tilt this year means that the gaps in its rings should be especially easy. Binocular observers can try using a tripod mount in order to spot Jupiter's moons (all four Galileans should be visible).

Mars, faint and far away, is still visible shortly after sunset, low in the southwestern sky. It moves closer to Antares during the month, giving naked-eye observers an excellent opportunity to make their own decisions about whether the "Rival of Mars" is indeed a worthy rival. They will be closest, less than three degrees apart, on the 17th.

Uranus and Neptune are both high in the sky in Capricornus, and are excellent targets for binoculars or a small telescope. A larger telescope will show them as obvious blueish-green disks, and might perhaps show a hint of detail on Uranus if you're fortunate enough to get a night of really steady seeing.

Pluto is still visible, and should still be a target for determined amateurs. Use a good chart, like the RASC *Observer's Handbook*, and try following the planet over several successive days to watch its motion against the star background.

Meanwhile, Venus rules the morning sky, waxing from a slim crescent on September 1 to almost first quarter by month's end. If you're an early riser, watch it change early in the month — it's amazing how fast the phase of crescent Venus will change, and how much the size of the planet changes as it races away from us in its tighter orbit around the sun.

Correction

In last month's write-up of the FPOA/AANC Star-b-que, the source of a raffle item was inadvertently misstated. Two custom made 60mm Plossl eyepiece from Hands on Optics were sent to a San Mateo County Astro Society member instead of the one ordered. When contacted, Gary Hand of Hands on Optics told the owner to take it to a star party and donate it as an item from Gary Hand of Hands on Optics. That's what was done! FPOA benefitted and so did the winner. FPOA thanks Gary Hand!

Comet Comments

Don Machholz

A new comet, discovered from Australia, is fading in our evening sky. Meanwhile, Comet Lee is in our morning sky while a fainter Periodic Comet Tempel 2 is in our evening southern sky.

Comet Lynn (1999 N2): Daniel Lynn of Victoria Australia discovered this comet on July 13. He was using handheld 10x50 binoculars to find this seventh-magnitude object. The comet will continue moving north in the evening sky as it pulls away from both the earth and sun.

COMET HUNTING NOTES: Lynn's discovery is the fourth consecutive comet to be visually discovered from Australia, and all four have been found in the past 12 months. Of the last nine comets found visually, seven have been discovered by Australians.

Ephemerides

C/1999 H1 (Lee)

Date	R.A. (2000)	Dec	El	Sky	Mag
08-05	07h23.3m	+38d23'	30d	M	7.4
08-10	07h15.4m	+40d16'	36d	M	7.6
08-15	07h06.5m	+42d15'	42d	M	7.8
08-20	06h56.0m	+44d23'	50d	M	8.0
08-25	06h43.1m	+46d43'	57d	M	8.1
08-30	06h26.5m	+49d17'	65d	M	8.2
09-04	06h04.2m	+52d05'	73d	M	8.3
09-09	05h33.4m	+54d58'	82d	M	8.4
09-14	04h50.3m	+57d36'	92d	M	8.4
09-19	03h51.6m	+59d14'	102d	M	8.5
09-24	02h40.6m	+58d44'	114d	M	8.6
09-29	01h30.1m	+55d21'	125d	M	8.7
10-04	03h02.5m	+49d30'	135d	M	9.0
10-09	23h50.8m	+42d26'	141d	M	9.2

Periodic Comet Tempel 2 (P/10)

Date	R.A. (2000)	Dec	El	Sky	Mag
08-05	17h08.3m	-19d20'	125d	E	10.5
08-10	17h13.7m	-20d59'	122d	E	10.5
08-15	17h20.3m	-22d34'	119d	E	10.5
08-20	17h28.3m	-24d05'	116d	E	10.5
08-25	17h37.5m	-25d30'	114d	E	10.6
08-30	17h47.9m	-26d48'	111d	E	10.6
09-04	17h59.3m	-27d59'	109d	E	10.7
09-09	18h11.8m	-29d01'	107d	E	10.7
09-14	18h25.2m	-29d54'	105d	E	10.8
09-19	18h39.3m	-30d37'	103d	E	10.9
09-24	18h54.1m	-31d09'	101d	E	11.0
09-29	19h09.4m	-31d31'	99d	E	11.1
10-04	19h25.0m	-31d41'	98d	E	11.2
10-09	19h40.9m	-31d41'	96d	E	11.3

Comet Lynn

Date	R.A. (2000	Dec	El	Sky	Mag
08-05	12h11.6m	+17d19'	46d	E	8.6
08-10	12h24.1m	+20d41'	44d	E	9.1
08-15	12h33.7m	+23d22'	43d	E	9.5
08-20	12h41.5m	+25d32'	41d	E	9.9
08-25	12h48.1m	+27d22'	40d	E	10.4
08-30	12h54.0m	+28d56'	39d	E	10.8
09-04	12h59.5m	+30d19'	38d	E	11.1
09-09	13h04.7m	+31d34'	38d	E	11.5
09-14	13h09.8m	+32d44'	38d	E	11.8
09-19	13h14.9m	+33d51'	39d	E	12.1
09-24	13h20.0m	+34d57'	40d	E	12.4
09-29	13h25.1m	+36d02'	41d	E	12.7

Elements

Object: Lee
Peri. Date: 1999 07 11.1657
Peri. Dist (AU): 0.708308 AU
Arg/Peri (2000): 040.6689 deg.
Asc. Node (2000): 162.6375 deg.
Incl (2000): 149.3558 deg.
Eccen: 1.00
Orbital Period: Long Period
Ref: MPC 34421
Epoch: 1999 07 11
Absol. Mag/"n": 7.0/4.0

Object: Lynn
Peri. Date: 1999 07 23.0274
Peri. Dist (AU): 0.761304 AU
Arg/Peri (2000): 357.7842 deg.
Asc. Node (2000): 254.6463 deg.
Incl (2000): 111.6658 deg.
Eccen: 1.0
Orbital Period: Long Period
Ref: MPC 35208
Epoch: 1999 07 23
Absol. Mag/"n": 9.5/4.0

Object: P/Tempel 2
Peri. Date: 1999 09 08.41663
Peri. Dist (AU): 1.481683 AU
Arg/Peri (2000): 195.02016 deg.
Asc. Node (2000): 118.21147 deg.
Incl (2000): 011.97662 deg.
Eccen: 0.5228125
Orbital Period: 5.47 years
Ref: NK640
Epoch: 1999 08 10
Absol. Mag/"n": 9.0/5.0

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Celestial Calendar
September 1999

Richard Stanton

LUNAR PHASES:

	Date		Rise	Trans	Set
LQ	15:17	PDT	02 00:22	06:39	13:48
NM	15:02	PDT	09 06:25	13:06	19:40
FQ	13:06	PDT	17 14:04	19:11	00:25
FM	03:51	PDT	25 19:38	01:00	07:06

NEARER PLANETS:

				R. A.	Dec.
Mercury 0.41 A.U. Mag. -1.4					
07	06:35	13:06	19:35	10:59.9	+08:17
17	07:27	13:32	19:36	12:06.5	+00:24
27	08:11	13:52	19:32	13:06.0	-07:08
Venus 0.38 A.U. Mag. -5.5					
07	04:50	11:19	17:47	09:16.7	+08:02
17	04:11	10:44	17:17	09:20.3	+09:22
27	03:47	10:22	16:56	09:37.2	+09:45
Mars 1.28 A.U. Mag. -0.0					
07	13:16	18:05	22:53	16:01.6	-22:30
17	13:09	17:53	22:37	16:29.4	-23:39
27	13:02	17:43	22:24	16:58.7	-24:31
Jupiter 4.14 A.U. Mag. -2.9					
07	21:31	04:15	10:55	02:11.8	+11:43
17	20:50	03:33	10:13	02:09.5	+11:29
27	20:08	02:51	09:29	02:06.1	+11:09
Saturn 8.56 A.U. Mag. +0.6					
07	22:11	05:05	11:55	03:01.6	+14:33
17	21:31	04:25	11:14	03:00.8	+14:27
27	20:51	03:44	10:33	02:59.2	+14:19

SOL Star Type G2V
Intelligent Life in System ?

Hours of Darkness

08:13	07	06:41	13:06	19:30	11:01.9	+06:12
08:40	17	06:50	13:02	19:14	11:37.8	+02:24
09:07	27	06:58	12:59	18:58	12:13.7	-01:29

ASTRONOMICAL TWILIGHT:

		Begin	End
JD 2,451,	428 07	05:12	20:59
	438 17	05:22	20:42
	448 27	05:32	20:25

SIDEREAL TIME:

Transit Right	07	00:00 =	21:56
Ascension at	17	00:00 =	22:35
Local Midnite	27	00:00 =	23:14

DARKEST SATURDAY NIGHT: 11-Sep-1999

Sunset	19:23
Twilight End	20:52
Moon Set	20:44
Dawn Begin	05:16
Hours Dark	08:24

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Telescope Loaner Program

Mike Koop (408) 446-0310

Web Page

Bill Arnett billa@znet.com

SJAA Loaner Scope Status

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

Stored 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
3	4" Quantum S/C	Manoj Khambete
30	7" f/9 Newt/Pipe Mount	Mike Koop

Current 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 till the scope becomes available after the due date.

# Scope	Description	Borrower	Due Date
1	4.5" Newt/ P Mount	Michael Masten	09/30/99
6	8" Celestron S/C	David Artiaga	11/06/99
7	12.5" Dobson	Jeff Crilly	10/10/99
8	14" Dobson	Darryl Lambert	09/04/99
15	8" Dobson	Phil Robba	06/27/99
16	Solar Scope	Bill Maney	08/23/99
18	8" Newt/ P Mount	Gordon A McClellan	10/09/99
21	10" Dobson	Ralph Seguin	09/04/99
23	6" Newt/ P Mount	Glenn Yamasaki	09/04/99
24	60mm Refractor	Scott McGrew	09/04/99
26	11" Dobson	Nilesh Shah	08/01/99
28	13" Dobson	Bill Sweeney	07/25/99
29	C8, Astrophotography	Dean Sala	09/04/99
31	8"/f8 Dobson	Lee Barford	10/23/99

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	?
4	60mm Refractor	Del Johnson	Indefinite
9	C-11 Compustar	Paul Barton	Indefinite
19	6" Newt/P Mount	Hsin I Huang	11/21/99
27	13" Dobson	Bud Wittlin	08/01/99

Notes:

If you know how to contact John Paul De Silva please call Mike Koop.

Thank you to the following people for their support to the loaner program:

Akkana Peck for the donation of two eyepieces.

Alexander Koczur for the donation and construction of a storage container for the many pieces for Scope #29, the Astrophotography scope.

Manoj Khambete for his generous monetary contribution.

Rich Neuschaefer for the donation of two Televiev Barlows.

Dave North for the repair, cleaning, and repainting of the solar scope. Dave also donated a new clock driven, super polaris mount. The newly renovated solar scope performed well at the Tech for Astronomy day.

Dave Cooper of Palo Alto for the donation of a Jaeger's 4 Inch Refractor. Jim Bartolini is currently renovating the scope. It should be ready for the loaner program soon.

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San Jose Astronomical Association,
c/o CEO
P.O. Box 110566
Campbell, CA 95011-0566

Submit

Members are encouraged to submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to ephemeris@whiteoaks.com.

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

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