

SJAA EPHEMERIS

The Discovery of Comet Machholz (Comet 2004 Q2)

Don Machholz

When I awoke at 3:20 on the morning of Friday, August 27, 2004, I knew what I wanted to do and why I was getting out of bed three hours before normal. This was a morning for comet hunting from, of all places, my back

deck. This is rare, as I have a homemade observatory 100 feet from my house, and I use it for most of my comet

hunting. In it are my 10-inch reflector, with which I have found 4 comets, 5" homemade binoculars (four comets) and an unmounted 5" homemade refractor, sitting in the corner (one comet).

I had used the 10" reflector and 5" binoculars for searching earlier in the month to cover much of the morning sky, now I would use a different instrument on my back deck to cover the southern sky.

The telescope for this morning's session is a 6-inch, f/8 reflector Criterion Dynascope, one that I bought in 1968 for Christmas. It cost \$200 and I paid all but \$50 for it (my folks paid that). This telescope has very good optics and the main mirror still has its original coating. It has a clock drive, (my only telescope to have one) and I use this telescope for all the public and private star parties I do each year. The eyepiece I was using this morning has a 2-inch outside diameter which I have adapted to fit over the eyepiece holder to provide a field of view of about 1.8 degrees. The magnification is about 35. I often use this combination to show M24 at dark site star parties. Sometimes our guests say that this was the best thing they saw that night. I also use this setup for conducting the Messier Marathon, finding all 110 Objects from memory last spring from the desert in Southern California. This telescope/eyepiece combination is very comfortable to me. I had been out two mornings before,

SJAA Activities Calendar

Jim Van Nuland

October

- 2 ATM class at Houge Park. 7:30 p.m.
- 8 Astronomy class at Houge Park. 7:30 p.m.
- 8 Houge Park star party. Sunset 6:40 p.m., 23% moon rise 2:25 a.m. Star party hours: 7:30 p.m. to 10:30 p.m.
- 9 Deep sky weekend. Sunset 6:38 p.m., 15% moon rise 3:28 a.m.
- 14-17 Cal-Star Star Party. Lake San Antonio Regional Park.
- 16 Deep sky weekend. Sunset 6:29 p.m., 7% moon sets 8:10 p.m.
- 21 ATM Class at Houge Park. 7:30 p.m.
- 22 Houge Park star party. Sunset 6:21 p.m., 76% moon sets 2:37 a.m. Star party hours: 7:00 p.m. to 10:00 p.m.
- 23 **General meeting.** Denni Medlock, Chabot Space and Science Center, "Dragon Skies, Astronomy of Imperial China". 8 p.m.
- 27 **Total Lunar Eclipse Party** at Houge Park. 6-11 p.m. Details at www.sjaa.net.

November

- 5 Houge Park star party. Sunset 5:05 p.m., 39% moon rise 0:12 a.m. Star party hours: 7:00 to 10:00 p.m.
- 5 Astronomy class at Houge Park. 7:30 p.m.
- 6 Deep sky weekend. Sunset 5:04 p.m., 30% moon rise 1:14 a.m.
- 11 ATM class at Houge Park. 7:30 p.m.
- 13 Deep sky weekend. Sunset 4:59 p.m., 1% moon sets 5:48 p.m.
- 19 Houge Park star party. Sunset 4:55 p.m., 62% moon sets 0:37 a.m. Star party hours: 7:00 to 10:00 p.m.
- 20 **General meeting** 8 p.m.
- 21 Fall swap at Houge Park. From Noon onward.
- 27 ATM Class at Houge Park. 7:30 p.m.

The Board of Directors meets at 6:30 p.m. preceding each general meeting. All are welcome.

24 hour news and information hotline: (408) 559-1221

<http://www.sjaa.net>

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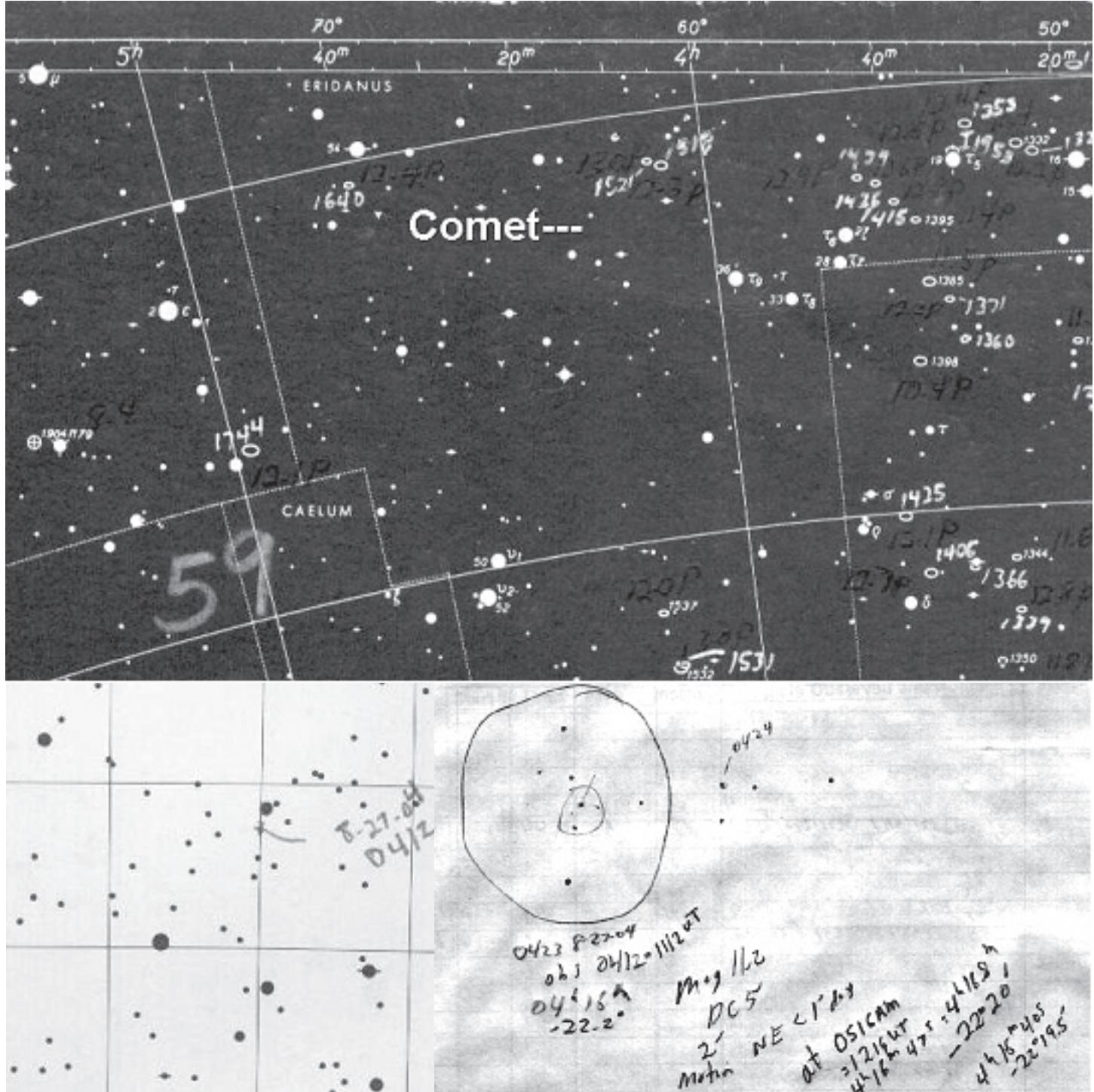
covering the first half of the area. Now I'm back for more.

After moving the American Flag out of its mount on the corner of the deck and leaning against the railing in order to get it out of my view, I began at 3:35 AM, picking up where I had left off, in

the southern sky. I look through the eyepiece with my right eye, with an eye patch on my left, and slowly sweep southward to the horizon. At the end of each sweep I raise the telescope to the beginning position, move it slightly east, and sweep again. There are a lot of galaxies in this area, and I picked up a few: NGC 1316, 1398, 1395, 1399, 1404

and a planetary nebula, NGC 1360 (which I had once accidentally reported as a possible comet in 1977). With each of these objects, all looking like faint comets, I confirmed that they were not comets by checking them against my Atlas of the Heavens charts that I had with me at the telescope. This chart

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The Uranometria didn't show that something was expected at this location. He makes a notation of the time and place. He also makes a small drawing of the comet and the surrounding stars. All pictures in this article are courtesy of Don Machholz.

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shows most of the galaxies and nebulae that I would normally pick up while comet hunting.

At 4:12 I picked up a faint fuzzy object, rather small. I looked closely to see if it was a double star or a small grouping of stars that simply appeared fuzzy. It was not. I then grabbed my star map to see if there were any known galaxies or nebulae in the area. It took me a couple of minutes to determine exactly where I was on the star map. There was nothing shown on the map.

A more detailed star atlas sat in my observatory. Our dog Shadow and I went out to the observatory to bring back the "Uranometria 2000" atlas. It showed nothing. I marked the location on the map with the date and time. At this point I made a drawing of the area, showing the location of the comet in relation to the surrounding stars. If it is a comet it should show motion in an hour's time. This detailed drawing would help determine both the rate of travel and the direction of travel. This drawing was made to show the view I had in the telescope, with south to the top.

An even more detailed star atlas is on the computer in my house. We (the dog follows me everywhere) went inside and turned on the computer, bringing up a program called "The Sky". It showed a couple of very faint (magnitude 15) stars in the area, too faint for me to see.

There is a chance that this could be a known comet. At any time there are a few previously discovered comets visible in the sky, perhaps this was one of them. I went to the Internet to a site which lists such comets (<http://www.aerith.net/>). It showed no comets in the area.

By now it was 4:37 AM. I had first seen the object 25 minutes ago, and had 40 more minutes until morning twilight would interfere with my view of it.

I then went out to the observatory and uncovered the 10-inch reflector. I quickly found the location and put in an eyepiece giving 64x. I could see that the object was fuzzy, round and made a mental note of where it was in relation

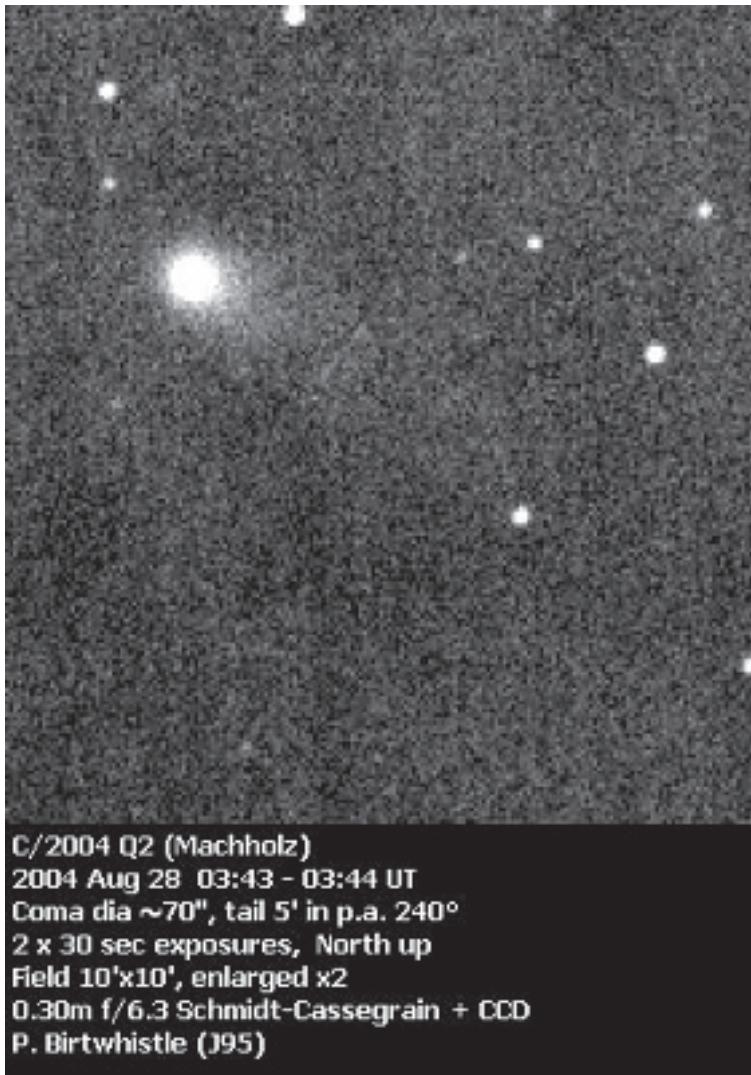
back out onto the deck my wife came out and tried to see it, but could not make it out very well due to its faintness.

I came back into the house and began writing up the report that I would need to send to the Smithsonian Astrophysical Observatory's Central Bureau for Astronomical Telegrams (CBAT) in order to get the comet confirmed and recognized. They are the clearinghouse for new comet discoveries.

Also during this time I went to a Web site to see if this part of the sky had been covered by the automated search programs. It wasn't.

During the

past few years there have been an increasing number of large government sponsored telescopes patrolling the sky for asteroids and comets that may one day pose a threat to the earth. In the course of these nightly, automated searches, these instruments pick up many of the comets that amateurs would normally find. The comets are named after the programs that find them: LINEAR, NEAT, LONEOS,



C/2004 Q2 (Machholz)
2004 Aug 28 03:43 - 03:44 UT
Coma dia ~70", tail 5' in p.a. 240°
2 x 30 sec exposures, North up
Field 10'x10', enlarged x2
0.30m f/6.3 Schmidt-Cassegrain + CCD
P. Birtwhistle (J95)

The comet's official portrait.

to the nearby stars. It seemed to me like it had moved a bit. I also uncovered the 5" homemade binoculars and examined the comet. In this instrument it was difficult to see, but it was visible.

I then went back into the house and tried to wake up the family. My wife at first did not want to get out of bed to look at it. I tried waking my two sons but neither wanted to get up to see it...they were too sleepy. When I went

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Spacewatch, Catalina. They search areas away from the sun, and the locations they have searched are plotted on the Internet. As if this isn't enough, a

SOHO spacecraft also has a camera system (named SWAN) covering the remainder of the sky, it too has discovered comets.



The author demonstrating his eye patch technique.

spacecraft named SOHO covers the area near the sun, its images are posted on the Internet and anyone viewing them can find (usually) tiny comets that evaporate as the approach the sun. These comets are named SOHO. The

With the advent of such searches, many amateurs have ceased visual comet hunting. Some have turned to using CCDs attached to their telescopes, which cover a small area of the sky with each image and can see very faint objects.

These amateurs are trying to beat the automated searches at their own game. I have continued my visual comet hunting, nonstop, searching for at least an hour per month each month since I began on January 1,



Don's back deck has beautiful daytime views as well. He lives in Colfax, CA.

1975. In the past I have done up to 553 hours of searching per year, presently I'm doing about 100 hours of searching per year, tailoring my searches to parts of the sky most likely to yield comets. This is based on a lot of factors, including knowing where the automated searches have been.

Shortly after 5AM I was out at the 10" telescope, making an estimate of the comet's brightness, size and shape. It had no tail. It was also showing some movement toward the east, and perhaps, it appeared to me, slightly to the north. I later learned that its actual motion was 20 arcminutes (one third of a degree) per day to the east and slightly south. So in one hour's time it had moved less than an arcminute, a very small amount. Finally, the twilight was so strong I could no longer see the comet, so I came in to report it.

I searched for 1458.25 hours since my previous find (of my ninth comet) nearly ten years ago. (One does not include my independent discovery of Periodic Comet de Vico on September 18, 1995, which does not carry my name). I have searched for 7047.25 hours since I began comet seeking on January 1, 1975, nearly thirty years ago.

I assembled the e-mail and sent it to the Central Bureau for Astronomical Telegrams (CBAT). I then faxed the same message to them. A follow-up phone call confirmed that the message had been received. I got ready to go to work; I work as a research and development technician at Coherent, a laser and optics company. I also work as a real estate appraiser.

It was six hours before I heard the news from Dan Green of the CBAT. The comet was confirmed, imaged by Robert McNaught and G. Garradd. It was named Comet C/2004 Q2, the next day (Machholz) was added to it.

Ed. note: Some web URLs were removed for formatting reasons. All URLs will be in the HTML version of this article.

James Lick

Everyone reading this newsletter is aware that the observatory on Mt. Hamilton is named after James Lick. But you may not be aware of the unusual life he lead and how he came to be associated with astronomy.

He was born in 1796. George Washington is still the president. He trained to be a carpenter and from there he went into building organs and later pianos. The piano making business wasn't going very well and he found himself in a predicament. His girlfriend was pregnant and he wanted to marry her. Her father refused. The one thing that he had going for him was a chance to move far away. Specifically, he made a deal with a ship's captain wherein he would build a piano for the ship if he could go to South America onboard. He set up a piano making business in Buenos Aires which turned out to be quite successful; often selling pianos back to the United States.

At one point Lick, who found life in Argentina to be difficult for a non-Spanish speaker, went to Europe for about a year. Presumably he returned to Buenos Aires reinvigorated but a Portuguese ship captured Lick and the vessel he was on. He was held as a prisoner of war but somehow he

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.

managed to escape.

With his new fortune he went back to Pennsylvania to once again try to marry his girlfriend. Apparently, Lick's family did not want to burden him with the news that his beloved had married. On the other hand, she did learn of his return and she took their son and left the city.

James Lick returned to Buenos Aires again, evading capture this time. He later moved to Chile and then Peru. Each move was motivated by an attempt to find a more stable political climate. At the age of 50 he decided to go to California. He left his piano-making business behind but took the proceeds from the sale of the business to the San Francisco area and started buying land. It was January of 1848 and his luck had only started to turn for the better. The gold rush came the following year and Lick actually thought he might be a gold miner but he later decided that land ownership would work out better.

Nor was he the only one to make a strong move by going to San Francisco. He asked his friend, a chocolate maker, to join him. If you know about Ghirardelli chocolate then you know how that turned out.

When James Lick was 77, he had a stroke. At that point he started to give serious consideration to his legacy. He decided that he wanted to be buried inside a giant pyramid in San Francisco. Fortunately he was surrounded by friends who could dissuade him. The most influential of these friends may have been George Davidson who was an astronomer and President of the California Academy of Sciences. Davidson slowly turned James Lick toward the idea of building a great astronomical observatory.

And that's how the Lick Observatory was started. James Lick died about 3 years after his stroke. He participated in the site location and he wanted the telescope to be the largest in the world.

This led to the 36 inch refractor on Mt. Hamilton with the reinterred remains of James Lick buried at the telescope's pier.

Fast Facts About James Lick

James Lick is reported to have been an atheist. Mt. Hamilton is named for a Methodist minister.

The 36 inch refractor is still in use today. Only the Xerxes 40 inch refractor is larger and it is located near Chicago.

At the time, the location of Lick Observatory was considered remote and mountainous – the first of its kind.

When his son was 37 years old, James Lick finally met him. They lived together for 8 years before John went back to Pennsylvania – only returning when his father was on his deathbed.

James Lick built a great hotel in San Francisco which included magnificent woodwork, some of it done by Lick himself. The hotel, which was on Montgomery Street, was destroyed in the '06 earthquake.

Lick purchased an iron and glass conservatory for the city of San Jose. However, before the crates arrived, he read a local newspaper article criticizing his shabby dress. This angered him and he left the crates unopened until after his death. A group of Franciscans purchased the crates and you now know this as the Conservatory in Golden Gate Park.

At one point, James Lick owned Catalina Island – all of it.

The father who turned down Lick's request for his daughter's hand in marriage, did so because Lick had no money. The father, a mill owner, said he would not relent until Lick had a mill the equal of his own. In 1855, Lick completed a far greater mill. He had it photographed and had copies sent back to Pennsylvania. By then, not only had the father died but so had his girlfriend, the mother of John.

This article was drafted from various web sources which are noted in the HTML version of this article.

Silicon Valley Astronomy Lecture Series

Russell Schweickart on October 6, 2004 at 7 p.m.

Andrew Fraknoi

Apollo 9 Astronaut Russell Schweickart will give a non-technical, illustrated talk on: "Asteroid Deflection: Hopes and Fears" in the Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills, California

Free and open to the public. Parking on campus costs \$2. Call the series hot-line at 650-949-7888 for more information.

Co-sponsored by:

* NASA Ames Research Center

- * The Foothill College Astronomy Program
- * The SETI Institute
- * The Astronomical Society of the Pacific

Russell Schweickart, Lunar Module Pilot on Apollo 9 and the first person to step outside a spacecraft without an umbilical cord, also served as Commissioner of Energy for the state of California. He was the founder and president of the Association of Space Explorers, the professional organization

of astronauts and cosmonauts.

Schweickart is currently Chairman of the Board of the B612 Foundation, dedicated to protecting the future of humanity by developing and demonstrating ways to deflect asteroids that are heading our way.

He will discuss what we know about the threat of cosmic rocks and the various ways that have been suggested for saving the Earth from large asteroid impacts, including both nuclear and non-nuclear alternatives.

Please come early as we expect a full house for this very special program.

Solar System Stats for October 2004

Adapted from the Observer's Handbook published by The Royal Astronomical Society of Canada which in turns gets this data from the U.S. Naval Observatory's Nautical Almanac Office and Her Majesty's Nautical Almanac Office and contributions by David Lane, St. Mary's University, Halifax NS.

		Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Sun
RA	1	12 ^h 18 ^m	9 ^h 56 ^m	12 ^h 12 ^m	12 ^h 06 ^m	7 ^h 52 ^m	22 ^h 23 ^m	21 ^h 01 ^m	12 ^h 30 ^m
	11	13 ^h 21 ^m	10 ^h 41 ^m	12 ^h 36 ^m	12 ^h 14 ^m	7 ^h 54 ^m	22 ^h 22 ^m	21 ^h 00 ^m	13 ^h 06 ^m
	21	14 ^h 22 ^m	11 ^h 26 ^m	13 ^h 00 ^m	12 ^h 22 ^m	7 ^h 56 ^m	22 ^h 21 ^m	21 ^h 00 ^m	13 ^h 44 ^m
Dec.	1	-0°16'	+12°43'	-0°21'	+0°31'	+20°48'	-10°58'	-17°05'	-3°13'
	11	-7°53'	+9°06'	-2°58'	-0°20'	+20°42'	-11°04'	-17°06'	-7°03'
	21	-14°37'	+4°58'	-5°34'	-1°09'	+20°38'	-11°08'	-17°07'	-10°43'
Dist (AU)	1	1.37	1.04	2.65	6.44	9.31	19.22	29.49	1.001
	11	1.42	1.11	2.63	6.41	9.15	19.33	29.64	0.998
	21	1.41	1.17	2.60	6.36	8.98	19.47	29.80	0.995
Mag	1	-1.5	-4.1	1.7	-1.7	0.2	5.7	7.9	
	11	-1.2	-4.1	1.7	-1.7	0.2	5.8	7.9	
	21	-0.6	-4.0	1.7	-1.7	0.2	5.8	7.9	
Size	1	4.9"	16.1"	3.5"	30.6"	17.8"	3.6"	2.3"	31'57"
	11	4.7"	15.1"	3.6"	30.7"	18.1"	3.6"	2.3"	32'03"
	21	4.8"	14.2"	3.6"	31.0"	18.4"	3.6"	2.2"	32'08"

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Publication Statement

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 San Jose, CA 95159-8243

Submit

Submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to ephemeris@sjaa.net. **Deadline, 10th of previous month.**

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 (Please leave message, phone screened).

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	Annette Reyes
3	4" Quantum S/C	Hsin I. Huang
6	8" Celestron S/C	Richard Savage
7	12.5" Dobson	Tom Fredrickson
12	Orion XT8 Dob	Christopher Salander
14	8" f/8.5 Dob	Colm McGinley
16	Solar Scope	Bob Havner
19	6" Newt/P Mount	Daryn Baker
23	6" Newt/P Mount	Wei Cheng
24	60mm Refractor	Al Kestler
27	13" Dobson	Steve Houlihan
32	6" f/7 Dobson	Sandy Mohan
34	Dynamax 8" S/C	Yuan-Tung Chin
37	4" Fluorite Refractor	Gary Hansen
38	Meade 4.5" Digital Newt	Tej Kohli

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
8	14" Dobson	Jan Lynch	10/9/04
10	Star Spectroscope	Bill O'Shaughnessy	10/11/04
13	Orion XT6 Dob	Eric Anderson	10/7/04
15	8" Dobson	Scott Pelger	10/5/04
26	11" Dobson	Vivek Kumar	10/10/04
29	C8, Astrophotography	Mark Ziebarth	12/10/04
33	10" Deep Space Explorer	Jason Yoon	10/15/04
36	Celestron 8" f/6 Skyhopper	Dennis Hong	10/8/04
39	17" Dobson	Rob Hawley	11/28/04
41	18" Sky Designs Dob	Len Bradley	10/12/04
42	11x80 Binoculars	Ritesh Vishwakarma	10/10/04

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	?
9	C-11 Compustar	Bill Maney	Indefinite
11	Orion XT6 Dob	Lia Klofas	10/6/04
21	10" Dobson	Michael Dajewski	Repair
28	13" Dobson	Anupam Dalal	11/1/04
35	Meade 8" Equatorial	Peter Young	11/28/04
40	Super C8+	Mike Macedo	12/11/04

Waiting list:

8	14" Dobson	Jim Song
10	Star Spectroscope	Jim Albers
33	10" Deep Space Explorer	Ion Coman

San Jose Astronomical Association Membership Form

New **Renewal** (Name only, plus corrections below)

Membership Type:

- Regular — \$15
- Regular with Sky & Telescope — \$48
- Junior (under 18) — \$6
- Junior with Sky & Telescope — \$39

Subscribing to Sky & Telescope magazine through the SJAA saves you \$10 off the regular rate. (S&T will not accept multi-year subscriptions through the club program. Allow 2 months lead time.)

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

**San Jose Astronomical Association
P.O. Box 28243
San Jose, CA 95159-8243**

Make your check payable to "SJAA"
(not Sky Publishing)

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