

# SJAA EPHEMERIS

## Observing Hickson compact galaxy cluster #50

Jane Houston Jones

In 1755, Immanuel Kant published *Universal Natural History and Theory of the Heavens*. He noted that some nebulae have different explanations and might be island universes. In 1877, E. M. Stephan discovered a small dense group of galaxies that now bears his name. Stephan's Quintet consists of five overlapping galaxies of unusual shape with structure of gas and stars that seem to interact with the neighboring galaxies. One large spiral in the quintet is probably a foreground object which happens to lie along the line of sight to the more distant galaxies.

In 1918, H. D. Curtis made galaxy observations at Lick Observatory on the Crossley reflector. He observed islands of stars or spiral nebulae. In 1923 Edwin Hubble made the discovery of Cepheid variable stars in the great nebula in Andromeda. For 30 years, astronomers using the 100-inch telescope at Mount Wilson made nightly discoveries of groups and clusters of galaxies.

In 1948 Carl Seyfert, observing with the 100-inch Hooker Telescope at Mount Wilson, discovered another

compact group of galaxies, now called Seyfert's Sextet. These galaxies exhibit violent tidal forces, an intergalactic plume of galactic matter. These apparent interactions led astrophysicists to the conclusion that these are compact dense systems. Geoffrey and Margaret Burbidge studied the spectra of these galaxies and discovered that all but one of the galaxies in the two groups shared the same red shift velocity, but that discordant red shifts are found in many compact groups of galaxies.

In 1957 George Abell presented a paper with a catalogue of 2700 rich clusters of galaxies visible on the Palomar Sky Survey plates. In the early 1980's Paul Hickson, in the interest of taking a large sample of compact galaxy groups, composed a catalogue using these same Palomar Sky Survey plates. The search was intended to find a good cross section for study with the expectation of finding new examples of discordant red shifts, so he employed

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## SJAA activities calendar

Jim Van Nuland

### July

- 5 ATM class. Hough Park, 7:30 p.m.
- 10 ATM class. Hough Park, 7:30 p.m. (no class on the 17th)
- 12 **General meeting**, Hough Park. 8:00 p.m. Speaker to be announced
- 18 Astronomy class. Hough Park, 7:30 p.m. Subject to be announced
- 18 Hough Park star party. Sunset 8:26 p.m., 70% Moon rises 11:49 p.m. Star party hours 9:30 p.m. to midnight
- 19 Deep sky weekend. Sunset 8:26 p.m., 68% Moon rises 0:13 a.m.
- 25-26 SJAA Glacier Point star party
- 26 Deep sky weekend. Sunset 8:21 p.m., 4% Moon rises 4:16 a.m.

### August

- 1 Hough Park star party. Sunset 8:25 p.m., 17% Moon sets 10:42 p.m. Star party hours 9:30 p.m. to midnight

### August (continued)

- 7 ATM class. Hough Park, 7:30 p.m.
- 9 **General meeting**, Hough Park. 8:00 p.m. Tim Thompson: *Astrophysics, cosmology, & the age of the universe*
- 21 ATM class. Hough Park, 7:30 p.m.
- 22 Astronomy class. Hough Park, 7:30 p.m., subject to be announced
- 22 Hough Park star party. Sunset 7:51 p.m., 22% Moon rises 2:04 a.m. Star party hours 9:00 p.m. to midnight
- 23 Deep sky weekend. Sunset 7:49 p.m., 12% Moon rises 3:01 a.m.
- 30 Deep sky weekend. Sunset 7:40 p.m., 15% Moon rises 9:41 a.m.

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



Hickson 50 as recorded in the digitized sky survey at Palomar Observatory.

24 Hour News and Information Hotline: (408) 559-1221

<http://www.sjaa.net>

## Observing Hickson 50

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rigorous criteria to select 100 compact galaxy groups. This group of 100 compact galaxy groups are a popular observing project for amateur astronomers. Hickson 50 in Ursa Major is deemed beyond the limit of almost all amateur telescopes, although it has been successfully observed in amateur telescopes ranging from 17 to 36 inches in aperture. Hickson 50 was my observing project over two recent weekends. First I attempted it May 26, 2003, at Lake Sonoma through my own 17.5 inch reflector. Next, I attempted it May 30 through the Fremont Peak 30-inch Challenger reflector. My 20 other weekend Hickson observations can be read here: <http://observers.org/tac.mailing.list/2003/May/0615.html>

May 26, 2003: 17.5 inch f/4.5 Litebox reflector. 222x 9mm Nagler, 333x 6mm Radian. Hickson 50 in Ursa Major 11h 17m 06.1s +54.55.07. Five components, something fuzzy seen. M97, the Owl nebula, is so close to this object, at the edge of the eyepiece field of view at 125x of my 16mm Nagler, 20 arc minutes away. My 125x eyepiece chart (created with SkyTools 2 charting software, <http://www.skyhound.com/skytools.html>) made it a snap to get the field of view in the eyepiece. A distinctive trapezoid (like the Hercules keystone) asterism of stars led the way east of M97. Exactly one asterism further east were the pair of mag 13 stars. Directly between these two and a little north should be Hickson 50. I did get confused because the SkyTools map showed an object that I took for a cluster — a circle with a cross in the middle. It's just a second confusing galaxy symbol it turns out, and this turned out to be Hickson 50a, the brightest component of the group. I did see a smudge of something in the right spot. To me the smudge was more than one object, like two clumps a little lighter gray than the background of the eyepiece view. The only other star in the area is a mag 17 star to the north, and I could see that star as well. These galaxies are in the 18 and 19 blue "B"

magnitude range meaning they are a little brighter in the visible magnitude range.

May 30, 2003: 30-inch f/5 reflector at Fremont Peak Observatory. I noticed that Mojo had the 30-inch aimed at M97 at our SFAA night at Fremont Peak. I took over the telescope for about 45 minutes and visually moved the big scope by pushing my hands against the truss poles and peering into the eyepiece while moving the telescope, holding a paper chart in my other hand, and balancing at the top of the tall ladder. Ursa Major was high over head. From M97, I changed the eyepiece from 9mm Nagler (400x) back to the 31mm Nagler (114x), moved the telescope past the trapezoid shaped asterism and voila, a little clump of galactic matter popped easily into view! Then I pumped up the power to 200x with the 16mm Nagler, and then higher using the 9mm Nagler for 400x. At each magnification change, I presented Hickson 50 to a group of about 12 members of the SFAA for their viewing pleasure. Some of the group definately saw more than one clump. I think all were mighty impressed. I distinctly made out 4 components, roughly in a tight circle. Two of the galaxies, 50a and 50c, were brighter than the others, and appeared more elliptical or round. The other two, 50b and 50d, were elongated. I didn't see 50e. The group was ready to move on to other brighter objects. I think mag 13.7 Pluto was the next target. Like



Both telescopes Jane used to observe Hickson 50 — in the foreground, the 17.5" f/4.5 Litebox dobsonian, and the 30" f/4.8 Challenger newtonian at Fremont Peak Observatory.

Hickson 50, Pluto was also next to a distinctive asterism, shaped just like the constellation Delphinus. On the next night we observed Pluto at Fremont Peak in several telescopes for confirmation. Mike Portuesi confirmed Pluto by starhopping to it in his home-made f/7.1 10-inch dobsonian reflector. It was in a slightly different place than the night before, as compared to the mini-Delphinus star group. It was Mike's first time to find Pluto in his own telescope. If you look for Pluto tonight, it will have moved on, being a wanderer in our solar system against a background of stars in our own galaxy.

— Jane Houston Jones,  
jane@whiteoaks.com

## Mooning

### Something in the way

Dave North

Because the Ephemeris has to go to print, we write this stuff fairly early in the month before you see it.

Sometimes that means the news is a little out of sync, and this is one of those times.

A few days after writing the June column we moved into the Moon's light, blocking the sun.

Maybe you saw it.

We went to Shoreline and set up

near a parking lot at the entrance of the park — complex analysis suggested this might have the clearest view and cleanest horizons easily available.

Well, no. In fact, from there it looked like we had to peer through the heaviest layer of sludge in the south bay.

Oh well.

To add insult to injury, on the way

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## Mooning

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there we realized another possibly excellent site was a few blocks away: the upper floor of the parking lot at Valley Fair (now called Westfield, which seems to be some monster company that's gobbling up big shopping centers. Sort of the Clear Channel of consumer cathedrals).

Probably wasn't too bad as spots go, since we spotted the Moon a bit earlier than most other published observers.

Somebody around here (I forgot, sorry) did whomp us by something like fifteen minutes!

And there was plenty of company. Several people set up telescopes, most of them far too long-focus to be particularly useful.

As usual, binoculars were best.

Here's a hint when attending a lunar eclipse: take your bins. Here's another: take your tripod.

I think the reason I got such an early spotting was the tripod. Steady counts. Also, it let me aim in the area of finger-in-the-air guessing as to where the Moon would appear, and stay right there.

Yes, I guessed right. So there.

At first I thought it wasn't a complete eclipse or was already partly over or something, since the lower left part was considerably brighter than the rest of the disk.

But as darkness improved the contrast, it was obvious this was totality — but they must have been having some remarkable weather on the other side of the earth to cause that much brightness.

Colors changed subtly as it rose, probably because of the changing atmospheric effects.

Observationally, the other remarkable thing was how sharp the terminator was when totality ended.

As usual, it wasn't sharp enough to throw crisp shadows and allow detailed observation of the terminator, but it was much closer to that ideal than usual.

Again, I think there must have been some pretty clear weather on the

other side of the world.

I mentioned that a lot of people set up telescopes at our "out-of-the-way" spot.

That doesn't tell half the story.

The entire roadway was crowded with cars, the parking lot was full, and it was "standing room only" along the path.

In other words, there was a surprising degree of interest in this odd and inconveniently early eclipse.

Could be more folks are getting interested in this astronomy stuff.

Of course, the rest of the month was clouds, clouds, clouds. Then the Moon came up again and it was clouds, clouds in the way plus wind and crappy seeing. Argh. This has not been the best lunar observation month. I see nothing!

Speaking of eclipses, next month the Moon will eclipse Mars ... but we won't see it. Head south to Central

America, northern South America, or vacation in the Caribbean if you want to see it.

Speaking of Mars, we're a couple of months away from the most promising opposition of your life.

Contrary to popular assumptions, Mars is my favorite target. It's also the hardest of the planets to observe "at profit" — a very challenging game to play.

Start looking about now, even when it's low on the horizon. Try to spot the poles and any other detail you can get.

Get used to its size, and the difficulty of making out detail. Most of the time it won't present itself clearly, and you'll need every ounce of skill, patience and experience you can muster.

Time to put in your Mars eyes.

— Dave North, north@znet.com

## The shallow sky

### Get ready for Mars

Akkana Peck

Congratulations to the proud parents of one of our newest asteroids, (22338) Janemojo! It's far away from us now, so we won't be able to see it this month in amateur sized instruments, but it's a hefty planetoid and I'm looking forward to trying for it some time when it's closer!

Meanwhile, we have some even bigger chunks of rock getting close:

Mars rises as the evening begins, and is visible for the rest of the evening. It should be big enough to be showing some detail now: it begins the month at 16 arcseconds, roughly the same size as Saturn, and ends the month at 20". It's still quite low in the sky, though, reaching only about 30 degrees elevation by dawn, so it may be difficult to catch it in steady air. Still, it's a good time to start looking: any practice you get now identifying elusive features on Mars will pay off well in August when the planet is closest to us.

It's spring in Mars' southern hemisphere (the one pointed toward us), and the south polar cap should be

shrinking fairly rapidly now. If you stay up late you can probably get a good enough view to watch this happen. Meanwhile, it's possible that we may be able to catch a glimpse of the

growing northern polar cap, even though it's tilted away from us, and for changes in the shading of Hellas and Syrtis Major.

Be careful not to confuse Hellas (a big light patch) with the polar cap: it's an easy

mistake to make when Hellas is on the limb. A computer program can be really helpful in identifying Mars features: programs that show Mars correctly rotated include Guide and Mars Previewer II on Windows, Starry Night

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## Shallow sky

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on Mac and Windows, xephem on Linux/Unix and Mac, and Marsmap on PalmOS. (Are there any others? Let me know, and I'll make a list of links to all the programs!)

Jupiter is still visible, low in the western sky at sunset; it will drop lower as the month progresses until we lose it in the sun's glare. Good-bye, Jupiter!

Mercury will be visible low in the west-northwest shortly after sunset during the last week of July. If you're having trouble finding the elusive planet, try it on the 26th, when it should be easy to locate less than half a degree

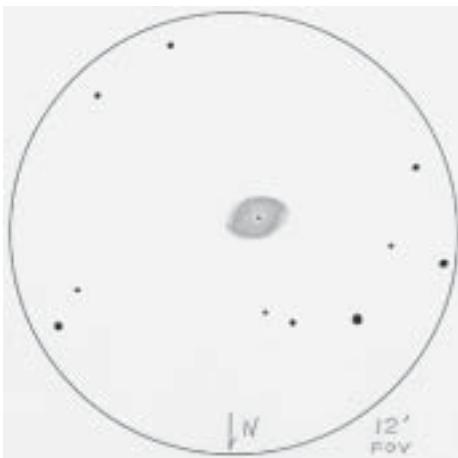
## Out there

### Delicacies on Via Lactea

Mark Wagner

If all you like are hunting fuzzy little galaxies, stop reading now. Contained in this article are objects located in the Milky Way, what professional galaxy hunters refer to as the ZOA — the zone of avoidance.

Although some of these objects may be viewed in your backyard, why not have some real fun? Look at TAC's "observing sites" page (<http://www.observers.org>) for local sites where the skies are so much darker... all within short drives. Join other observers at these sites by watching the mailing list on TAC near observing weekends. It is a friendly and helpful group!



NGC6543, Cat's Eye Nebula sketched by Peter Natscher.

north of Jupiter, close enough to get both in the same low-power telescope field. This should make for a good public star party show, too, both on that Friday and the day after.

Saturn moves into the morning sky this month, but never gets very far from the sun. Venus, also nearly lost in the morning glare, is moving the other way, disappearing behind the sun by month's end.

Uranus (in Aquarius), Neptune (in Capricornus), and Pluto (in Ophiuchus) are all well placed for observing this month.

— Akkana Peck,  
observer@shallowsky.org

Here are a few good targets for this month:

NGC 6543 is the Cat's Eye Nebula in Draco. With good steadiness, the shell can reveal some intricate inner detail. At mag 8.1 it is easy to see. Local observer Peter Natscher noted "the bright blue/purple planetary shows its two overlapping oval lobes and ring detail along with the inner darker area surrounding the bright central star."

Does the Blinking Planetary blink? Put sufficient power on NGC 6826 to show its shell. Don't over magnify it. With the object centered, you'll see the small puffball. Concentrate, staring directly at it and suddenly you'll see the shell "blink out" leaving only the pinpoint central star. As soon as you move your eye though, the star hides and the puffball shows itself again.

NGC 6802 is a little open cluster very near "The Coathanger" (Melotte 111). From my backyard it is "small, dim, and looked like an unresolved globular cluster." While there, be sure to enjoy The Coathanger in a binocular.

NGC 6633 is an open cluster in Ophiuchus described by Jane Houston Jones as "best viewed in a wide-field at low magnification, the 30 star loose cluster, at mag 4.7 resembles a ...



NGC6520 and B86, photographed by Mischa Schirmer, Germany

retriever? ... it looks just like a miniature Canis Major, complete with ears, snout, bared teeth, four legs ... and a tail!"

Here is a dim one viewed from my backyard in a 10" dob. "NGC 6781, mag 12.0, 1.8', in Aquila is a smallish planetary nebula. I suspected it without a filter, but upon installing the UHC it was an easy target. Although it is described as a "planetary ring" I saw no evidence of a ring, just a fairly solid circle. The object is easy to locate, one third the distance between Delta and Zeta Aquilae."

Robert Leyland, an excellent north bay observer, describes "a couple of open clusters, between Delta and Nu Aquila, NGC 6755 a large loose open cluster, with two more concentrated knots of stars, nearby NGC 6756 is smaller, and tighter like a scattering of salt grains."

Jamie Dillon is fun, writing about an open cluster in Scutum...

"Veronica Lake Cluster, 6704, just north of the Wild Duck, with a trailing arm of stars curling out from the center, like Ms Lake

being sultry with her hair over one eye." Jamie... how do you come up with them?

Continued on next page



Veronica Lake

## Out there

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The Little Gem. Two objects with the same name? Both are planetaries. David Kingsley, using a 7" dob, writes NGC "6818, also known as the Little Gem, is a bright tight planetary with a clear hint of a hole visible. This gives it a mini-M57 appearance, with the nice additional feature of a triangular corral of field stars surrounding the nebula. A very pretty view." Steve Gottlieb describes NGC 6939 "At 380x this was a beautiful annular planetary about 30 arc-second diameter with a well-defined 15 arc-second dark central hole. The rim was clearly brighter along the N edge and slightly weaker on the following edge." Two gems, same name?

Let's finish with a wonderful pair of objects in the same field of view. Make sure to be at a dark site to view this.

Albert Highe describes B86 and NGC 6520 as "located in a rich area of the Milky Way, I would normally consider these objects unremarkable by themselves. But I find the juxtaposition of the higher density of stars against the near absence of stars to be fascinating. It is one of those objects I return to every opportunity I get." I couldn't agree more. It is a beautiful and amazing sight!

There are many objects worth visiting. See the box for a list of some, including those above.

— Mark Wagner,  
mgw@resource-intl.com

Name	RA	Dec.	Type
NGC 6543	17 58 00.0	+66 37 00.0	PN Cat's Eye
NGC 6826	19 44 00.0	+50 31 00.0	PN Blinking
NGC 6823	19 43 00.0	+23 18 00.0	OC
NGC 6802	19 30 00.0	+20 16 00.0	OC
NGC 6633	18 27 00.0	+06 34 00.0	OC
NGC 6781	19 18 00.0	+06 32 00.0	PN
NGC 6756	19 08 00.0	+04 41 00.0	OC
NGC 6755	19 07 00.0	+04 14 00.0	OC
NGC 6712	18 53 00.0	-08 42 00.0	GC
NGC 6517	18 01 00.0	-08 57 00.0	GC
NGC 6818	19 43 00.0	-14 09 00.0	PN Little Gem
NGC 6645	18 32 00.0	-16 54 00.0	OC
NGC 6445	17 49 00.0	-20 00 00.0	PN
NGC 6440	17 48 00.0	-20 21 00.0	GC
NGC 6583	18 15 00.0	-22 08 00.0	OC
NGC 6514	18 02 00.0	-23 02 00.0	ER
NGC 6369	17 29 00.0	-23 45 00.0	PN Little Gem
NGC 6401	17 38 00.0	-23 54 00.0	GC
NGC 6638	18 30 00.0	-25 29 00.0	GC
NGC 6355	17 23 00.0	-26 21 00.0	GC
NGC 6540	18 06 00.0	-27 45 00.0	GC
NGC 6520	18 03 00.0	-27 54 00.0	OC with B86
NGC 6522	18 03 00.0	-30 02 00.0	GC
NGC 6528	18 04 00.0	-30 03 00.0	GC

## An interesting SJAA eclipse report

Doneley Watson

Since we were not conveniently located for viewing this most recent eclipse, I decided to see if I could locate some pictures of mine that *Sky & Telescope* had published for an eclipse many, many years ago. I sent them a note with the approximate years during which I would have taken the pictures, and they came up with the appropriate issue (June 1949). The eclipse was on April 12. I had produced 52 images spread over diagonals of three 2 1/4 by 3 1/4 negatives. The

shutter was snapped every 5 minutes. They sent me a copy of the two pages with the images from the middle picture spread across the bottom of two pages.

— Doneley Watson,  
doneleyw@msn.com



Eclipse night pictures from Terry Kahl, pictured below. Left, the moon emerges from eclipse. Above, the group gathers at Hogue Park.



## Retrograde

Barry Peckham

The planets are fish

That swim real slow.  
They can't beat the current,  
As seen from below.

The stars in this river  
Are jellies that glow.  
And planets swim through them,  
Aimed east as they go.

But once every Earth year  
These fish take a break.  
They swim a bit downstream  
And loops that they make  
Confused ancient thinkers  
On what it could take  
To ex-plain this motion.  
It made their heads ache.

So place yourself under  
This scene that is ours,  
With planet-fish swimming  
Through jellyfish stars...  
Self-luminous jellies,

Not jelly from jars!  
And all so you'll picture  
The motion of Mars.  
— Barry Peckham, barry@litebox-telescopes.com



## Minor planet 22338 Janemojo = 1992 LE

On the first day of January 1801, Giuseppe Piazzi discovered an object which he first thought was a new comet. But after its orbit was better determined it was clear that it was not a comet but more like a small planet. Piazzi named it Ceres, after the Sicilian goddess of grain. Three other small bodies were discovered in the next few years (Pallas, Vesta, and Juno). By the end of the 19th century there were several hundred.

Several hundred thousand asteroids have been discovered and given provisional designations so far. Thousands more are discovered each year. There are undoubtedly hundreds of thousands more that are too small to be seen from the Earth. One of these little mountains in the sky, 5km 1992 LE, was discovered by Carolyn Shoemaker and David Levy during a long successful observing night on June 3, 1992. They began at 20:00 and continued until 04:30 the next morning, taking 40 pictures using the 18-inch schmidt camera atop Mt. Palomar in California. After several required observations to recapture the object and determine its orbit, minor planets are given a number and sometimes discoverers name them. Minor planet 1992 LE has been designated 22338 Janemojo, for SJAA members Jane and Morris "Mojo" Jones.

Additional information, orbital plots and a motion trail, plus pictures and the Minor Planet Circular are displayed on this website: <http://www.whiteoaks.com/Janemojo.html>. Asteroid data courtesy <http://nineplanets.org>

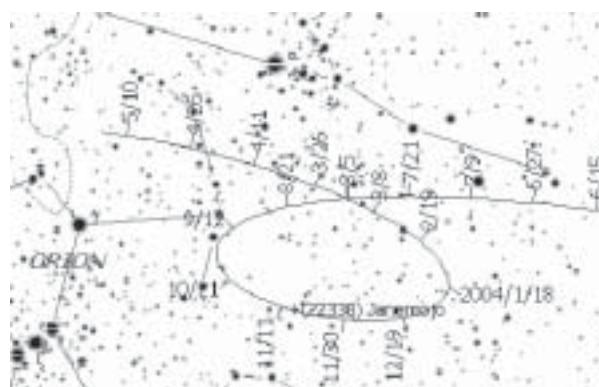
## Directions to Houce Park

Houce (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.



Photo from the May meeting at Eastbay Astronomical Society, where Don Stone (far right) presented new asteroid name certificates to Dave Rodriguez (far left, asteroid Astrowizard), and SJAA members Morris Jones (center left) and Jane Houston Jones.



Motion trail plot for MP (22338) Janemojo for the next twelve months, by Skytools <<http://www.skyhound.com>>

## Celestial calendar

July 2003

Richard Stanton

Lunar Phases:	Date	Rise	Trans	Set
FQ 19:32 PDT	06	12:57	19:07	00:39
FM 12:21 PDT	13	20:59	00:47	05:30
LQ 00:01 PDT	21	00:37	07:13	13:58
NM 23:53 PDT	28	05:25	12:54	20:28

Nearer Planets:	R. A.	Dec.
Mercury, 1.27 A.U., Mag. -0.2		
07 06:02 13:24 20:46	07:14	+23:52
17 07:03 14:11 21:19	08:41	+20:09
27 07:53 14:41 21:28	09:49	+14:12

Venus, 1.70 A.U., Mag. -3.9		
07 05:03 12:23 19:44	06:13	+23:23
17 05:19 12:37 19:56	07:06	+22:56
27 05:38 12:50 20:03	07:59	+21:22

Mars, 0.47 A.U., Mag. -2.2		
07 23:30 04:52 10:13	22:42	-13:17
17 22:59 04:21 09:44	22:51	-13:03
27 22:25 03:46 09:08	22:55	-13:14

Jupiter, 6.24 A.U., Mag. -1.8		
07 08:44 15:37 22:30	09:27	+15:50
17 08:15 15:06 21:56	09:35	+15:12
27 07:46 14:34 21:23	09:43	+14:31

Saturn, 9.98 A.U., Mag. 1.0		
07 05:11 12:28 19:45	06:18	+22:35
17 04:37 11:54 19:11	06:23	+22:32
27 04:03 11:20 18:37	06:29	+22:30

SOL Star Type G2V Intelligent Life in System ?		
Hours of Darkness		
05:32 07 05:55 13:14 20:33 07:03 +22:37		
05:50 17 06:01 13:15 20:29 07:44 +21:15		
06:13 27 06:09 13:15 20:22 08:24 +19:17		

Astronomical Twilight:	Begin	End
JD 2,452,827 07	04:06	22:24
837 17	04:16	22:17
847 27	04:27	22:06

### Sidereal Time:

Transit Right Ascension at Local Midnight		
07 00:00 = 17:51		
17 00:00 = 18:31		
27 00:00 = 19:10		

### Darkest Saturday Night: 26 Jul 2003

Sunset	20:24
Twilight	22:08
Moon Set	18:56
Dawn Begin	04:19
Hours Dark	06:11

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## Submit

Submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to [ephemeris@sjaa.net](mailto:ephemeris@sjaa.net).

## SJAA loaner scope status

All scopes are available to any SJAA member; contact Mike Koop by email ([loaner@sjaa.net](mailto: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	Annette Reyes
3	4" Quantum S/C	Hsin I Huang
7	12.5" Dobson	Michael Lagae
16	Solar Scope	Bob Havner
19	6" Newt/P Mount	Daryn Baker
24	60mm Refractor	Al Kestler
27	13" Dobson	Richard Savage
32	6" f/7 Dobson	Sandy Mohan
33	10" Deep Space Explorer	Michael Wright
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
6	8" Celestron S/C	Carl Ching	8/9/03
10	Star Spectroscope	Keng Teh	7/19/03
11	Orion XT6 Dob	Tina Mia Kurth	5/22/03
13	Orion XT6 Dob	Michael Rudy	7/27/03
15	8" Dobson	Gary Hansen	8/9/03
23	6" Newt/P Mount	Wei Cheng	8/9/03
28	13" Dobson	Jim Albers	7/20/03
29	C8, Astrophotography	Frank Williamson	8/9/03
35	Meade 8" Equatorial	Patrick Lewis	8/9/03
36	Celestron 8" f/6 Skyhopper	Dennis Hong	5/23/03
37	4" Fluorite Refractor	Jeff Crilly	6/3/03
39	17" Dobson	Lloyd Frisbee	7/13/03

### 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	?
8	14" Dobson	Ron Gross	7/3/03
9	C-11 Compustar	Paul Barton	Indefinite
12	Orion XT8 Dob	Vinod Nagarajan	7/8/03
14	8" f/8.5 Dob	Tom Frerickson	7/19/03
21	10" Dobson	Ralph Seguin	Repair
26	11" Dobson	Jan Lynch	7/3/03
34	Dynamax 8" S/C	Mike Macedo	8/7/03

### Waiting list:

3	4" Quantum S/C	Eric Anderson
8	14" Dobson	Craig Colvin
12	Orion XT8 Dob	Rob Hawley
16	Solar Scope	Dwight Elvey

# San Jose Astronomical Association Membership Form

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