

SJAA EPHEMERIS

Mt. Wilson Mars observing run, August 22, 2003

Dave North

Mars could not be observed with the 60-inch until it was at least 30 degrees up, which meant there were some hours to burn before the main event. This meant deep sky observation in a somewhat bright sky.

First up was M13. Unlike at Lick, they have the sense to use an

eyepiece that allows you to see the entire globular. It's a bit nicer than a typical amateur scope, but not that much better. What was remarkable was how clearly the central condensation could be seen — and how large it is. In such a large scope, it's also obvious that the outriding stars are far more

extensive on one side than the other.

To illustrate how much light the scope gathers, M13 was easily observed with the white lights still on in the dome.

Next, another globular: the companion M92 — probably a better object for this instrument. It fit well in the eyepiece and showed heavier concentration with a very extensive group of outriders. The revelation in this view is M92's "bar."

It has a concentrated line of outriders that just barely do not qualify as 'concentration' forming an obvious line that runs right through the middle, much as a barred spiral galaxy.

Then came the Ring. Structure seemed lacking internally and ill-defined, but the overall lobate structure was fairly apparent. The spectacular

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SJAA Activities Calendar

Jim Van Nuland

October

- 3** Houge Park star party. Sunset 6:48 p.m., 65% Moon sets 1:08 a.m. Star party hours 7:30 p.m. to 10:30 p.m.
- 4** ATM class. Houge Park, 7:30 p.m.
- 11** General meeting, Houge Park. 8:00 p.m. Dr. Bruce Weaver: *MIRA, Using Artificial Intelligence to Classify Double Stars*
- 16** ATM class. Houge Park, 7:30 p.m.
- 18** Deep sky star party at Coyote Lake Park, east of Gilroy. Sunset 6:27 p.m., 51% moon sets 0:33 a.m.
- 24** Astronomy class. Houge Park, 7:30 p.m., subject to be announced
- 24** Houge Park star party. Sunset 6:19 p.m., no moon. Star party hours 7:30 p.m. to 10:30 p.m.
- 25** Deep sky weekend. Sunset 6:18 p.m., 1% moon sets 6:38 p.m.
- 26** Darkness squandering time ends at 2 a.m. turn clocks back to 1:00 a.m.
- 31** Halloween. Set up at home. Sunset 5:11 p.m., 50% Moon sets 11:06 p.m.

November

- 1** ATM class. Houge Park, 7:30 p.m.
 - 8** General meeting, Houge Park. 8:00 p.m. Jane Houston Jones, *Observing with Caroline, Williamina, Jocelyn, Annie and friends*
 - 9** Fall Swap Meet, Hogue Park, Noon SUNDAY
 - 13** ATM class. Houge Park, 7:30 p.m.
 - 14** Houge Park star party. Sunset 4:58 p.m., 70% Moon rises 9:22 p.m. Star party hours 7:00 p.m. to 10:00 p.m.
 - 15** Deep sky weekend. Sunset 4:58 p.m., 60% moon rises 11:29 p.m.
 - 22** Deep sky weekend. Sunset 4:54 p.m., 1% moon rises 6:37 p.m.
 - 28** Astronomy class. Houge Park, 7:30 p.m., subject TBA
 - 28** Houge Park star party. Sunset 4:51 p.m., 34% moon sets 10:01 p.m. Star party hours 7:00 p.m. to 10:00 p.m.
 - 29** ATM class. Houge Park, 7:30 p.m.
- The Board of Directors meets at 6:30 p.m. preceding each general meeting. All are welcome.

Wanted

Editor for SJAA Ephemeris

Energetic volunteer(s) wanted to edit the monthly newsletter. (We're not leaving entirely, just shifting our focus in other directions.) It's an easy job with lots of support from existing columnists and club members!

Things you **don't** have to do include printing, mailing, distribution, and publishing on the web site.

Things you will need to provide: publishing software and a good computer. We use Adobe Pagemaker, Photoshop, and Acrobat.

If you have the desire and ability for this high-visibility position, contact the current editors at ephemeris@sjaa.net.

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

<http://www.sjaa.net>

Mt. Wilson Mars

Continued from previous page

aspect was the ease of viewing the central star. At times I could hold it for well over a second with direct vision, and it was obvious most of the time averted.

I do not recall ever seeing it as well, though the 40-inch at Hamilton came close one night.

Someone decided they wanted to see Neptune, so off we went. It takes roughly an hour for everyone to cycle through, so it took until just after midnight for everyone to confirm that it's still a little bluish disc. Not much to be seen, nor did any moons stand out. Kind of a waste of time.

Mars

Knowing the cycle time, and expecting people to go slowly for the main event, and suspecting that the seeing would improve with time, I didn't get in line at first. Better to wait for improved conditions.

Also, I hoped some people would give up and go home having seen what they came to see.

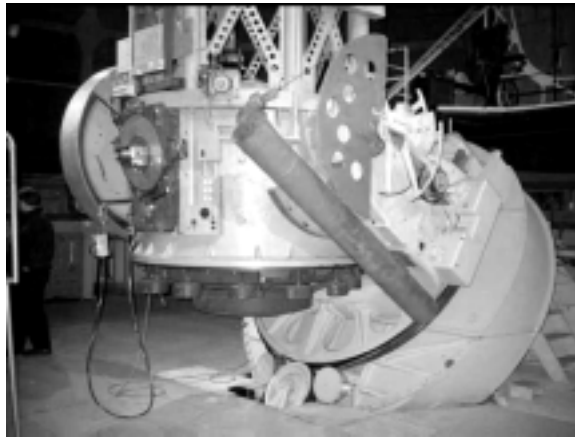
Not to mention that Akk had set up her 8-inch outside for something to look at while we waited for the line to lighten up. As time went by and the mirror settled things began to pop really well.

This boded well for images in the 60-inch, as did early observer reports.

Boding aside, it was phenomenal. I'll cut to the chase: what I really was hoping to see was some sign of Olympus Mons, and there was a distinct brightening where Xephem indicated it would be. The nearby features matched reasonably to what might be expected from the charts, so as certainly as these things can be, I think I saw it.

For those into aesthetics there's no mistaking the high point: the various dark albedo features had a tonality and degree of detail that I've seen in no other scope anywhere, any time.

Our previous experiences with



The cassegrain focus observing position on the Mt. Wilson 60-inch telescope features a 4-inch focuser.

this cranky old beast had convinced us it had good glass, but being able to pick out that kind of detail on Mars means it has awfully good contrast on top of the accurate optics.

The sixteen-inch Meade was also open for viewing early in the morning, but by then the seeing had fallen apart a bit. And most of the night, Akkana's eight inch did very creditably, but nothing could compare to the big iron.

I spent perhaps ten minutes at the eyepiece in two sessions. There were a lot of people and everyone was very excited by what they saw.

It may seem like a paltry amount of time and I suppose it was. But fair's fair: 30 people for ten minutes is 300 minutes or five hours — and the scope could only hold Mars in view for about four hours because of angle limits.

I guess that means I got a bit more than my fair share. I hope nobody minds too much, and if they did, I'm sure they at least know why.

— Dave North, north@znet.com

[Editor's Note: The San Francisco Amateur Astronomers are planing a Mt. Wilson trip October 18. There are still a few spots open. The cost will be \$50.00 per person for the observing session. Refunds are given for either weather or atmospheric conditions which require closing the dome. Plan your own transportation and lodging, bring a camp chair for your own comfort. Contact SFAA Mt. Wilson coordinator Bill Stepka if you are interested. stepka@aol.com]

The shallow sky

Mars-ipan

Akkana Peck

What a great Mars opposition this has been! I hope you've been enjoying the view as much as I have.

And it's not over yet. As October opens, Mars is about 19 arc seconds. That may not sound like a lot, compared to the 25 it showed at opposition — until you consider that the last Mars opposition, two years ago, Mars barely made it to 16 arc seconds at its closest! By Halloween, Mars will have shrunk to about 15 arcseconds — so it will still be nearly as big it was at its best two years ago, plus it's up early in the evening so it's easy to observe it at any time. Set up those scopes for Halloween and give the trick or treaters some Mars-ipan!

The southern hemisphere is still tilted toward us, and has just passed the summer solstice. Last month we saw rapid shrinkage of the polar cap, with some observers noting short-lived periods of separation between adjacent areas of ice. The pole is very small now, and southern regions such as Hellas which are sometimes bright with clouds or frost are now dim and can be a challenge to make out, and can show some interesting detail that you won't normally see during other seasons. It seems to me that some of the dark areas also look a little different — does Syrtis Major seem smaller to you than it does in winter? The constantly changing, poorly mapped, and poorly explained shapes of Mars' albedo features are always an interesting mystery, and fun to watch.

I've often spoken skeptically about colored filters, but this opposition has changed my mind a bit. I've definitely had nights this year when an orange or red filter helped bring out detail in the dark areas, and, I've also had good luck with a light violet filter. Blue filters can help bring out clouds, though this is a clear season on Mars so there hasn't been much cloud activity this time around. Still, filters can help when you're going after cloud

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Mars

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features such as the orographic clouds over Olympus Mons or the Tharsis volcanos.

Speaking of Tharsis volcanos: Dave and I were blessed with the opportunity to observe Mars with the LAAS on the 60-inch at Mt. Wilson. The 60" is known to be an excellent planetary as well as deep sky telescope, and Mt Wilson came through with good seeing and good weather (whew! We just missed a storm system by a day or two). One of our goals was to try to see the Olympus Mons — not the mountain itself, but the “orographic” clouds which form over it, much like the clouds you’ll often see over a mountain such as Mt. Hamilton — and sure enough, we were able to detect Olympus Mons, and nearby, smaller cloud patches denoting the three Tharsis volcanos. A bit later I tried it in my 8" dobsonian, set up outside. With judicious use of filters, and knowing exactly what to look for, I was able to see Olympus Mons, but I couldn’t make out the other volcanos in my smaller scope.

I highly recommend the Mt. Wilson experience to anyone (whether a planetary or deep sky observer) who has the opportunity to go. The telescope is available for rent to amateur groups. It’s a lovely place, with interesting history (much like Lick Observatory), excellent equipment and friendly staff. Perhaps the SJAA should consider a group outing some day.

Meanwhile: Saturn’s back! It rises around midnight as October begins, and a few hours earlier by Halloween (which is, alas, not quite early enough for most trick-or-treaters). Saturn’s ring tilt is finally decreasing from its maximum, but it’s still fairly wide open, and there is still plenty of detail to see. We’ll have a nice long Saturn season this winter. Then Jupiter trails about five hours after Saturn; that means it’s only visible to early risers this month, but that’s actually good, because we’ll be able to look forward to a long Jupiter season following a long Saturn season.

And Uranus and Neptune are still

visible in the October evening skies, though Pluto sets early enough that it has become a tough target. Mercury is visible in early evening early in the month but is lost in the sun’s glare by mid-month; Venus is lost in twilight early in the month, but emerges into the evening sky late in the month.

— Akkana Peck,
observer@shallowsky.org

Out There...

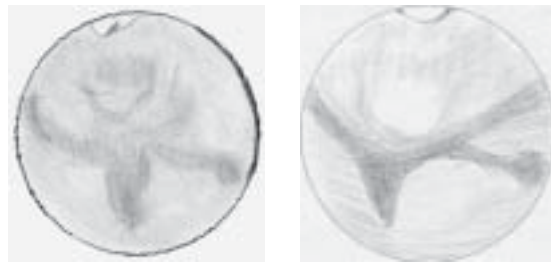
Deep gems in an autumn night

Mark Wagner

October brings us earlier sunsets, longer nights and more extragalactic targets. It is a good time to get out to the hilltops nearby, where skies are darker, your telescope can begin showing its capabilities and you find the views rewarding. The Fremont Peak Observatory season is now over, the campers are fewer, and the park becomes quieter. A perfect time to go. A one hour drive... take a picnic dinner, watch the sun set over a vista from Monterey Bay to Santa Cruz, and have some stars for dessert.

We’ll travel south from Cassiopeia to Cetus and Sculptor, visiting planetary nebulae, double stars, globular clusters and galaxies.

Begin with NGC 40, a beautiful and interesting planetary nebula in Cassiopeia (RA 00.13.09 Dec +72 31 20). Start at Gamma Cephei (the top of the King’s hat) and place a Telrad just under a quarter of the distance to fourth magnitude Kappa-Cass. At mag 12.3 and generously proportioned at 35"x38", you can’t miss this even at low power. You’ll find a bright central star with dim halo containing two shells. At 294X it seemed to have two dark lanes surrounding the central star, arcing slightly around it to the N and S. The western of these lanes seemed more pronounced. A star sits at the S tip and a very dim star at the E edge. Looks almost like a tight spiral galaxy with a western arm curving around to the S and an E arm curving to the N.



Two Mars sketches from midnight on September 10. Left by Jane Houston Jones, right by Akkana Peck. Syrtis Major is the prominent angular feature pointing toward the north pole (down). Both sketches were made as a dust storm developed on Hellas, a large basin between Syrtis Major and the south polar cap near the top.

Eta Cassiopeia is one of my favorite double stars. Finding it is very easy, situated between the center star of the “W” and the bottom star in the western leg. Its color contrast is remarkable. I see the primary as yellow and the orange-red dwarf companion as bronze. Others have seen yellow and tan to white and orange, white and white (amazing!), red and gray, even white and silver! With a 12 second separation this is an easy split.

Move now just past the midway point between Eta Cass and M31 to find three stars, mags 4.5, 5.5 and 5.0, landmarks to hop from to NGC 185. The target is 25' W of the mag 4.5 star. NGC 185 is a large dim galaxy, a satellite of M31. Its magnitude is 10.10, but its large angular size dims it considerably to a surface brightness of only 14.3. I estimated its size at about 10'x10', containing a bright core and a possible hint of a spiral arm or some form of elongation along the object’s western extremity. While you are in the area, hunt down NGCs 278 and 147.

How about another planetary nebula? This one is large and dim compared to NGC 40. We’re after NGC 246, also known as The Skull. Jump sixty degrees south into Cetus, toward the second magnitude star Diphda. From Diphda notice two mag 3.5 stars — one ten degrees northeast, another about the same distance northwest..

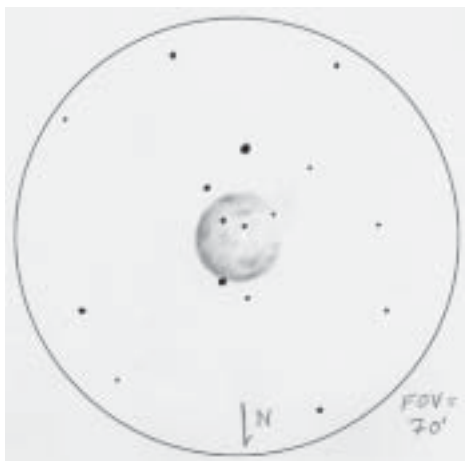
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Out there

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Between these two stars sit another pair, mag 5.1 and 4.7. Your target is between these two stars and about a degree south. David Kingsley reports "NGC 246 is a beautiful large textured planetary nebula floating superimposed on 4 or 5 stars. This is one of the brightest, biggest, and most interesting planetaries I have seen that has not been awarded a common name. Take a look at this pretty planetary in Cetus if you haven't seen it before."

We'll now head to one of the true showpieces of the sky, NGC 253 — The Sculptor Galaxy. It lies just under thirteen and a half degrees south of The



NGC 246, a Planetary Nebula in Cetus by Peter Natscher

Skull, in Sculptor close to its border with Cetus. Use a wide-field eyepiece for the galaxy, it is enormous at 27.5'x6.8', bright at mag 7.1 and has a correspondingly high surface brightness of 12.7. Jeff Gortatowski describes 253 as "very nice indeed with several noted dark lanes seeming to criss-cross or looking contorted near the center." This is truly a must-see object. Spend some time pulling out HII regions and the dark mottling in its dusty spirals.

NGC 288 is a surprise. It is also the last object for this month's article. Less than two degrees south-southeast of NGC 253, you'll come upon a dim globular cluster. This is NGC 288. At 13.8' this is a large globular, which dims its mag 8.1 significantly. Local observer Andrew Pierce described it

well — "It's kind of sparse for a globular and lacks much central concentration. Sort of looks like the richest, most uniform OC you could imagine."

If you would like to share your observations, or read others', an outstanding visual observing resource in the bay area is <http://www.observers.org> — there is an active

Mooning

I had a first in my moon observations this month, but it's kind of cheating to make an issue of it here.

While I was observing Mars through my 12.5-inch at Fremont Peak last month, Ron Dammann dropped by in a state of some excitement to tell me they'd located Phobos in the 30-inch.

Truth to tell, I had never had a confirmed sighting so I hurried up and elbowed my way to the eyepiece. Sure enough, there it was. Though easiest with averted vision, I found it not terribly difficult to see it straight on in the moments of best seeing.

Other observers were able to pick it out in as little as 7-inches (Rich Neuschafer et al) and even note movement over time.

Okay, wrong moon, but I was jazzed so now you have to hear about it.

As for events, October 6 will be a good night for checking out the Eastern Seas. There will be a pretty strong libration. You won't see much detail because the Sun will be mostly right over their heads, but that does cause intense contrast between the highlands and Maria.

If you haven't seen this, it's well worth the trouble. It's even more fun when the terminator is there just after full, but you can't have both in the same month!

I've been getting some questions and comments about the column lately, but curiously most of them come from people googling from all over the country rather than club members. I wonder if we now have more readers from outside the club than inside?

mailing list discussing diverse topics related to visual astronomy in the bay area, and you'll find a wonderful archive of observing reports covering many levels of experience, observing sites and equipment. I use it as a resource for helping write these articles.

— Mark Wagner mgw@resource-intl.com

Cheatsies

Dave North

The first one was more a comment than a question, but it's something that needs to see the light of print — partly because it's funny how nicely the writer (Michael Stone from Princeton Louisiana) points out that I'm a silly goose:

"I happened across your article '3D Mooning' in the March *Ephemeris* while doing a bit of internet surfing, and thought I'd make one comment.

You seemed disappointed with the fact that there was more north/south libration than east/west (at a good time to shoot a pair of pictures for) a lunar stereogram. The idea being that, ideally, for your purpose there should be little/no libration N-S and it should all be E-W.

I just wanted to point out that any two rotations of a body can also be described as a single rotation through a different angle.

It's easy to get hung up on orthogonal relationships and forget that there are many angles in between.

If you just vectorially add the two rotations (N-S & E-W), it shouldn't be hard to line up the two images in such a way that they line up with the Left/right eye orientation of us humans, giving you the perfect effect that you want."

I'll stop right here for a second because it was just a little before here that I slapped my forehead and said "Duh, Dave, of course!" What a dope! I made the whole project sound far more complicated than it needs to be.

Though I absolutely love and respect the way Michael worded this

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Mooning

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gentlemanly explanation, let me translate for the Bluntness Impaired:

Dave, if you rotate the pictures, they'll work fine! Oh, wow. Can I miss the obvious sometimes? So that's why they do peer reviews! Not content with having nailed my hide to the wall, he proceeds to tan it:

"Additionally, you get the bonus that the resulting libration angle will be LARGER than the two separate orthogonal angles added to get it — perhaps optically bringing the moon even closer than that 3 feet you spoke of in your article."

Again, dead right. To get the most radical effect, the best time to shoot would be when there's a strong libration in both limbs, then catch the opposite.

In what little defense I can muster, I'll point out the problem would still be to get pictures with similar terminators with librations across the same axes, but that's a simpler problem than the one I posed.

Double duh!

In a moment of enthusiasm, he effuses: "It IS a cool idea that I think we actually NEED to see."

I wholeheartedly agree, and it's unfortunate I made it sound harder than it actually needs to be. If you want to read about the original problem, go <http://ephemeris.sjaa.net/0303/f.html>.

So somebody get on it! Everybody knows I'm not a shooter.

A couple of days later, I got a real question based on the same kind of problem, this time from Bruce McClure (with a email address at northnet, which is personally flattering...):

"After visiting many web sites, I especially enjoyed the lesson on latitudinal libration and the dissemination of misinformation, and give you credit for your forthrightness! I hope you welcome a question. Would the Earth's zenith point on the surface of the Moon vary from roughly 6.5 degrees north to 6.5 degrees south of the equator over the course of a month?"

Yes.

Okay, we can have a little more

fun with this question than just answering it. And fun it was for me, because I simply hadn't thought about it before.

I had thought about a similar problem when charting the Moon's orbit some years back because I noted that it describes an analemma — much like the shape you see on the side of most Earth globes to characterize the Sun's path through our sky.

So I already knew if you look at either the Sun or the Moon, you see it move "up" and "down" in the sky over the course of a "year" (one orbit).

What I hadn't thought about is what the Earth would look like from the Moon. And because it has an axial tilt (like ours) with respect to its orbital

plane you end up with exactly the same deal.

But remember: like the analemma.

This means the movement "up" and "down" is not steady and smooth because of the behavior described by Kepler regarding elliptical orbits: when it's closer, it moves faster. When further, slower. So part of the up/down movement seems to happen much more rapidly than the part at the opposing side of the orbit.

That's why when you look at that analemma on the Earth globe, one lobe is considerably smaller than the other.

Just in case you were curious.

— Dave North, north@znet.com



The Moon from three feet

Bill Maney

If you read David North's column "The Moon from 3 feet" you may remember what I was asking about. I wanted to make a 3D picture of the moon. We always see the same side of the moon but it swings and wobbles subtly, an effect called libration. I used this effect to create this stereo pair of images in March and May of this year.

Rather than wait around for the libration to be only side to side (a very long wait), I would use any case where the two swings were directly across from each other. And I'd rotate the images till these swings were only left to right. The other tricky part is that it's not the phase that I want to be the same for the two images. I really want the terminator to be in the same place.

Viewing a stereo pair can be difficult for some people. The best method I've found after trials with my friends is to place the pictures on a table, place an 8.5x11 piece of cardboard the tall way as a baffle separating the pictures and put your nose on the cardboard. Merge the two images with your eyes by relaxing focus, ignoring blurriness till the images merge. It is difficult to do since your eyes are not used to focusing closer than they are aimed. Using a pair of reading glasses (\$10 at any drugstore) helps a lot for this.

— Bill Maney, wm@design.mxim.com
[Edited for space — see the full text of Bill's excellent article in the online edition of the SJAA Ephemeris]

Goodbye Galileo

Gary Mitchell

Remember the Galileo probe around Jupiter? It's the one with the stuck antenna that required very slow downloading of images of Jupiter and its moons.

Robert Naeye, editor of ASP's Mercury, reports in the September-

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.

David Des Marias speaks on Mars rover mission

Silicon Valley Astronomy Lecture Series; Wednesday, October 8, 2003, 7:00 p.m. Smithwick Theater, Foothill College, El Monte Road and Freeway 280, in Los Altos Hills, California.

Dr. Des Marais, a member of Science Operations Working Group for the mission, will describe the plans for landing two advanced rovers on the surface of the red planet in January. Both rovers will have instruments on board that can act as "robot geologists," searching for evidence of past water on our neighbor planet.

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

October issue of the Mercury that on September 21, the Galileo probe will perform one last maneuver — a suicide plunge into Jupiter.

The Galileo probe is nearly out of fuel. While there's some left, NASA will crash it into Jupiter, rather than just let it go and risk contaminating any possible oceans on Europa or maybe even Ganymede with surviving Earth bugs. (That IS a possible risk. One crew of astronauts brought back pieces of a another probe that had crashed on the lunar surface years earlier. There were still viable dehydrated bacteria in some of its foam insulation.)

Galileo dropped a high-pressure probe into Jupiter itself. It sent back many images of Jupiter, its moons, even an asteroid and its "moon" (if you can call it that). Most of the evidence for an ocean under the icy crust of Europa came from Galileo.

So, goodbye Galileo. Thanks for a job well done, despite the significant setbacks.

By the time you read this, Galileo will be just a cloud of vapor, adding a little bit to the colorful Jovian clouds that it photographed. A fitting end, it seems to me.

— Gary Mitchell

Correction

SJAA membership with Sky & Telescope subscription is \$48

In the last Ephemeris it was mentioned that Sky Publishing will be raising their rate by \$3. Unfortunately, Sky Pub's notice was poorly worded, leading us to believe we had until December.

The new rate has already gone into effect. If someone receives a renewal notice from Sky Publishing quoting the old rate, they will honor it for that person, but that's the only exception.

So, the cost for SJAA membership with Sky&Tel is now \$48, not \$45.

Celestial calendar

October 2003

Richard Stanton

Lunar Phases:	Date	Rise	Trans	Set
FQ 12:09 PDT	02	14:40	19:20	00:10
FM 00:27 PDT	10	21:47	04:41	12:21
LQ 05:31 PDT	18	23:59	07:15	14:53
NM 05:50 PDT	25	07:31	13:09	18:38

Nearer Planets:	R. A.	Dec.
Mercury, 1.37 A.U., Mag. -1.3		
07 06:04 12:11 18:19	12:04	+01:37
17 06:50 12:35 18:21	13:07	-05:38
27 07:35 12:58 18:22	14:09	-12:40

Venus, 1.62 A.U., Mag. -3.9		
07 08:15 13:48 19:21	13:40	-09:37
17 08:37 13:56 19:14	14:28	-14:12
27 09:00 14:05 19:10	15:17	-18:12

Mars, 0.53 A.U., Mag. -1.3		
07 17:08 22:24 03:40	22:17	-15:00
17 16:30 21:51 03:11	22:23	-13:37
27 15:56 21:22 02:48	22:33	-11:55

Jupiter, 6.07 A.U., Mag. -1.9		
07 04:18 10:49 17:20	10:42	+09:11
17 03:48 10:17 16:46	10:49	+08:29
27 03:17 09:44 16:11	10:55	+07:50

Saturn, 8.78 A.U., Mag. +0.7		
07 23:47 07:03 14:18	06:55	+22:04
17 23:09 06:24 13:40	06:56	+22:03
27 22:30 05:45 13:00	06:56	+22:03

SOL Star Type G2V	Intelligent Life in System ?
Hours of Darkness	
09:34 07 07:09 12:57 18:45 12:49	-05:20
09:55 17 07:18 12:54 18:31 13:26	-09:06
10:18 27 07:28 12:53 18:18 14:04	-12:38

Astronomical twilight:	Begin	End
JD 2,452,919	07	05:45 20:11
929	17	05:54 19:57
939	27	06:03 19:45

Sidereal Time:	
Transit Right Ascension at local midnight	
07 00:00 = 23:54	
17 00:00 = 00:33	
27 00:00 = 01:13	

Darkest Saturday Night: 25 Oct 2003	
Sunset	18:20
Twilight	19:48
Moon Set	18:38
Dawn Begin	06:01
Hours Dark	10:13

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Members Email Lists:
<http://www.sjaa.net/mailman/listinfo>

Publication Statement

SJAA Ephemeris, newsletter of the San Jose Astronomical Association, is published monthly, 12 times a year, January through December.
San Jose Astronomical Association,
P.O. Box 28243
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 (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
7	12.5" Dobson	Tom Fredrickson
16	Solar Scope	Bob Havner
19	6" Newt/P Mount	Daryn Baker
24	60mm Refractor	Al Kestler
26	11" Dobson	John Bunyan
28	13" Dobson	Jim Albers
34	Dynamax 8" S/C	Mike Macedo
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
3	4" Quantum S/C	Eric Anderson	9/16/03
11	Orion XT6 Dob	Harshavardhan Kuntur	11/22/03
12	Orion XT8 Dob	Jan Lynch	10/3/03
13	Orion XT6 Dob	Kosha Ganatra	11/1/03
15	8" Dobson	Ion Coman	11/27/03
27	13" Dobson	Steve Houlihan	10/5/03
29	C8, Astrophotography	Tajinder Singh	11/22/03
36	Celestron 8" f/6 Skyhopper	Jason Yoon	
39	17" Dobson	Ron Gross	11/3/03

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	?
6	8" Celestron S/C	Carl Ching	11/9/03
8	14" Dobson	Craig Colvin	11/17/03
9	C-11 Compustar	Paul Barton	Indefinite
10	Star Spectroscope	Keng Teh	10/19/03
14	8" f/8.5 Dob	E. Clay Buchanan	11/23/03
21	10" Dobson	Michael Dajewski	Repair
23	6" Newt/P Mount	Wei Cheng	11/9/03
32	6" f/7 Dobson	Lia Klofas	12/6/03
33	10" Deep Space Explorer	Michael Hewett	11/23/03
35	Meade 8" Equatorial	Patrick Lewis	11/9/03
37	4" Fluorite Refractor	Jeff Crilly	10/3/03

Waiting list:

1 4.5" Newt/P. Mount Prashanth Krishnamurthy
3 4" Quantum S/C Hsin I. Huang
13 Orion XT6 Dob Michael Hewett
33 10" Deep Space Explorer Glenn White
37 4" Fluorite Refractor Gary Hansen
8" Dob, Vinod Nagarajan; 6" Dob, Sandy Mohan; any scope, Choi Vo, Luen Lin,
Mike Van Meter, Al Garcia

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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Address: _____

City/ST/Zip: _____

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