



SJAA EPHEMERIS

SJAA Activities Calendar

Jim Van Nuland

(late) March

- 28 Houge Park star party. Sunset 7:27 p.m., 55% moon rises 2:28 a.m. Star party hours: 8:30 until 11:30 p.m.
- 29 Dark Sky weekend. Sunset 7:28 p.m., 45% moon rises 3:13 a.m.

April

- 5 Dark Sky weekend. Sunset 7:34 p.m., 0% moon sets 7:31 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 11 Houge Park star party. Sunset 7:40 p.m., 44% moon sets 2:27 a.m. Star party hours: 8:30 until 11:30 p.m.
- 19 Board Meeting and auction rehearsal at Houge Park. 6 p.m. until it "works".
- 20 **Auction XXVIII at Houge Park.** Open at noon. Selling 1 p.m. to about 4 p.m. (Note: Sunday, daytime)
- 25 Astronomy Class at Houge Park. 7:30 p.m. Topic: Beginner's Workshop. Bring your scope and we will help you use it.
- 25 Houge Park star party. Sunset 7:52 p.m., 72% moon rises 1:08 a.m. Star party hours: 9:00 until midnight.
- 26 Dark Sky weekend. Sunset 7:53 p.m., 62% moon rises 1:48 a.m.

May

- 3 Dark Sky weekend. Sunset 8:00 p.m., 2% moon rises 5:14 a.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 9 Houge Park star party. Sunset 8:05 p.m., 29% moon sets 1:06 a.m. Star party hours: 9:00 until midnight.
- 17 **General Meeting at Houge Park.** 8 p.m. Our speaker is Dr. Dana Backman of the SETI Institute. His topic is "Nearby Stars and Debris Disks: A Ringside Seat to Planet Formation."
- 30 Astronomy Class at Houge Park. 7:30 p.m. Paul Kohlmler and Steve Nelson will present an Introduction to Astrophotography.
- 30 Houge Park star party. Sunset 8:22 p.m., 16% moon rises 3:09 a.m. Star party hours: 9:30 until midnight.
- 31 Dark Sky weekend. Sunset 8:22 p.m., 8% moon rises 3:43 a.m.

The Board of Directors meets before each general meeting. Call the hotline for the exact time.

Auction XXVIII — SJAA/Bay Area

Astronomical Auction

April 20, 2008 - Houge Park

Rob Hawley

On Sunday, April 20, 2008, SJAA will hold its 28th annual astronomical auction and swap meet at Houge Park in San Jose. The SJAA Auction is a great opportunity for beginners to purchase their first telescope at a great price! Experienced observers often find equipment they need for their next observing project, from O-III filters to finders to star charts. All kinds of interesting items are found in the auction.

Doors open at 11:30 a.m. to register material for the auction. Registration will end by 12:30 p.m. We must limit the number of items to 100 so the auction does not last too long. Please limit yourself to about four items maximum for the auction.

We strongly suggest you pre-register your items so that people know what you are bringing. The club reserves the right to accept only appropriate material for the auction. SJAA offers free advertising if you pre-register your items for the auction. Please email the auction team at auction@sjaa.net with a description of the item and a picture if possible. All items submitted by 6 p.m. on Friday, April 18th will be added to the auction website. This allows the bidders to find out how much that APO scope is really worth, so you will be more likely to sell it.

Sellers may specify a minimum bid, which, if not met, will return the item back to the seller with no donation requested. We strongly recommend you set a minimum price if you have any expectations on how much you will net from your sale. You are not permitted to bid on your own items.

The auction is a fundraiser for the SJAA. We use this money to cover our annual costs and to make improvements in our programs (e.g. improvements in our loaner program). We ask that everyone selling items contribute at least 10% of the sale price to SJAA. By default on expensive items we will limit your contribution to \$50 on each item sold. If you want to help SJAA more you can donate more! SJAA receives almost 80% its donations from people that elect to donate the full price of the item to SJAA. You can also elect to split

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24 hour news and information hotline:

(408) 559-1221

<http://www.sjaa.net>

DEEP SKY OBSERVING

by Mark Wagner

April 2008 third quarter to new moon observing list. The list begins in the north and moves southward. Targets are rated 1 or 2 for challenge, with 1 being easier. All objects are within one hour of right ascension, north to south, in the east at astronomical dark. More objects are in the full list which is at <http://www.resource-intl.com/Deep.Sky.Apr.08.html>

Rating	Object	Const.	Type	Size	Mag	R.A.	Dec.
2	NGC 3998	Uma	GX	3.0'x2.4'	11.6B	11 57 56	55 27 15
	Shares field with NGC 3990.End of an arc of 5 galaxies.						
1	M 109	Uma	GX	7.6'x4.6'	10.6B	11 57 36	53 22 29
	Sharply concentrated with a fainter halo and a bright, oval core that increases slightly to a faint, stellar nucleus.						
2	Arp 18	Uma	GX	5.3'x2.1'	11.2B	12 05 34	50 32 23
	4088 and 4085, two obviously elongated galaxies, contrasting brightness and orientations.						
2	NGC 3949	Uma	GX	3.3'x2.4'	11.5B	11 53 41	47 51` 34
	Bright, fairly large, oval NW-SE, broad concentration, substellar nucleus. Forms a pair with N3950 1.8' N						
2	N4096	Uma	GX	7.4'x1.7'	11.5B	12 06 01	47 28 31
	Bright, very large, almost edge-on, sharp concentration with a very small bright core embedded within the long extensions.						
1	M106	Uma	GX	18.8'x7.3'	9.1B	12 18 57	47 18 31
	A really magnificent object with a pile of neighbors						
2	N4217	Uma	GX	5.7'x1.6'	11.1V	12 15 50	47 05 33
	In same field as M106						
2	NGC 3675	Uma	GX	5.8'x3.0'	11.0B	11 26 07	43 35 05
	Large and bright. Very elongated with a brighter center.						
2	NGC 4151	Uma	GX	6.5'x5.0'	11.5B	12 10 32	39 24 21
	Very bright, very small/stellar nucleus, fainter halo. N4156 and N4145 nearby. Seyfert galaxy with variable magnitude nucleus.						
2	N4244	Cvn	GX	17.7'x1.9'	10.3V	12 17 30	37 28 47
	Beautiful, extremely large ray extends at least 3/4across the 20' field, broadly concentrated, ill-defined core or nucleus.						
2	NGC 3941	Uma	GX	3.7'x2.3'	11.3B	11 52 55	36 59 14
	Bright disk running EW, very bright core, arcing dust lanes throughout.						
1	M100	Cvn	GX	7.5'x6.3'	10.1B	12 22 55	15 49 25
	Bright, very large, almost round, well-defined bright core surrounded by a large, fainter halo. N4322 and N4328 nearby.						
1	M99	Cvn	GX	5.4'x4.7'	10.4B	12 18 49	14 25 02
	Fairly prominent arm SE of large, bright core, south toward west. Dark gap between arm and core. North arm ill-defined.						
2	N3705	Leo	GX	4.9'x2.0'	11.9B	11 30 07	09 16 37
	Bright elongated galaxy that jumps out at you. It is bright enough to be a Messier.						
1	M61	Vir	GX	6.5'x5.7'	10.2B	12 21 54	04 28 20
	Round, mottled halo. Large, fairly dim. Stellar core.						

Note: Source catalogs are Messier, Arp, Abell Planetary, Abell Galaxy Cluster (AGC), Hickson Compact Galaxy (HCG), Sharpless III Regions, Barnard Dark Nebulae, Herschel 400-I, Herschel 400-II. Herschel 400-I are identified as NGCXXXX, Herschel 400-II as NXXXX.

The Dawning of the Age of Aquarius

Akkana Peck

A few months back I had the odd problem of needing to prepare something to say about astrology (in a non-astronomical gathering). I realized I didn't actually know very much about it, beyond my sign (Virgo) and the one-paragraph-fits-all style horoscopes you see in the newspaper.

Oh, and I knew one other thing about astrology: your "birth sign" isn't actually the constellation the sun was in when you were born, because of the precession of the Earth's spin. The least I could do was to find out my real — my astronomical — birth sign.

So I fired up XEphem (any planetarium program works) and ran the date back to find out what the sky really looked like when I was born.

Turns out the Sun was in Leo, not Virgo. The constellations have shifted due to precession, a small wobble in the Earth's orbit, in the couple of thousand years since the zodiac was invented. So I'm an astrological Virgo but an astronomical Leo.

Then I checked the positions of the planets. The moon was new. Saturn was in Aquarius and Neptune was in Libra. Jupiter was in Taurus. When I told Dave, he said that means I have a lot of bull.

Venus and Mars were straddling the border between Cancer and Gemini, about as close to each other as the Sun and Moon, less than five degrees apart. Hey, maybe that's why I like all these traditionally male pursuits like astronomy and physics! Yeah, Venus and Mars together, that explains it, sure.

Since the Moon was new, it was quite close to the Sun, only about five degrees away. Also nearby in Leo were Mercury, Uranus, and Pluto — the innermost and outermost planets. Quite a syzygy!

As long as I was researching astrology, I thought I should look into that "Age of Aquarius" business. I mean, I probably heard the song a bazillion times growing up. So what's the deal? Are we in the Age

of Aquarius yet — did it start in the sixties, or what? If not, what age are we in?

Well, it turns out it's a

lot more complicated than that. It's so complicated ... that nobody has a clue when the Age of Aquarius starts!

"Ages" in astrology go back to precession again. It takes 25,800 for a complete precession cycle. During this time, the Earth's axes, where you point your equatorial mount (currently pointing at Polaris to the north) will make a complete circle and come back to where it started. The location of the equinoxes — the points at which Earth's equator intersects the ecliptic — will also make a complete cycle.

There are two equinoxes: vernal (spring, currently in Pisces) and autumnal (fall, currently in Virgo). An astrological age represents the time it takes for the vernal equinox to move from one sign to another. It used to be in Aries, now it's in Pisces, and the Age of Aquarius starts when it moves into the sign of Aquarius.

But note that "sign" and "constellation" aren't exactly the same: constellations aren't all the same size, but astrological signs divide the year into twelve equal

parts.

And therein lies the problem. See, it's easy to tell when the vernal equinox moves into the constellation of Aquarius. But the Age of Aquarius doesn't start until it moves into the sign of Aquarius. And where is that? Well, it's calculated as a fixed distance from the beginning of Aries. And where is that? Well, it's where the vernal equinox was when astrology began, when the astrological signs corresponded with the zodiacal constellations in the sky.

And when was that? Well, it turns out astrologers don't agree. There are several different schools of thought, and depending on which one you choose, the Age of Aquarius might start in 2600, 2595, 2654, 2638, 2150, or 2062.

Wait — not in the 1960s? But what about the song?

It turns out the song was referring to the "dawning" of the age, which doesn't require that the vernal equinox actually be in Aquarius, only that it be near enough to be influenced by it.

And there you have it. (Where? What? Um, never mind, I'm not sure either.) Seems suitable fodder for an April 1 column.

Oh, in case you wanted to know about actual planets to look at this month: Saturn is in Leo and is visible all night. Mars is still visible in the western sky all evening, nestled between the two Gemini twins. Jupiter, in Sagittarius, rises in the wee hours of the morning. Pluto is also in Sagittarius, a couple of hours ahead of Jupiter. The Sun, Venus and Mercury are all nestled together in Pisces, with Uranus just over the border into Aquarius and Neptune a bit over an hour ahead in Capricornus.

Galaxy Seasons

Rob Hawley

Our galaxy resembles a flat disk. Twice a year (in the summer and winter) our own galaxy fills our view of the night sky. The dense mat of stars blocks our view of anything on the other side of those portions of the Milky Way. In the fall and especially in the spring the night time sky points away from the Milky Way allowing us to see what is beyond.

What lies beyond is a lot! Fortunately the most interesting parts of what lies beyond are situated away from the plane of our galaxy. Their representation on flat paper (or your computer screen) limits the two pictures below. Keep in mind that there is a 3rd dimension that is poorly represented.

Fall Galaxy Season

In the fall the Milky Way passes through from the summer constellation Cygnus through Cassiopeia then Perseus and onto the Winter Milky Way. Located just off the plane in this direction are the largest members of our Local Group. The Local Group is collection of Galaxies within about 10 million light years of earth. The most easily seen members are the Andromeda Group (M 31, 32, and 110) and M33. More challenging members are NGC 147 and 185. NGC 6822 is closer than Andromeda, but is located just off the plane of the Milky Way in Sagittarius.

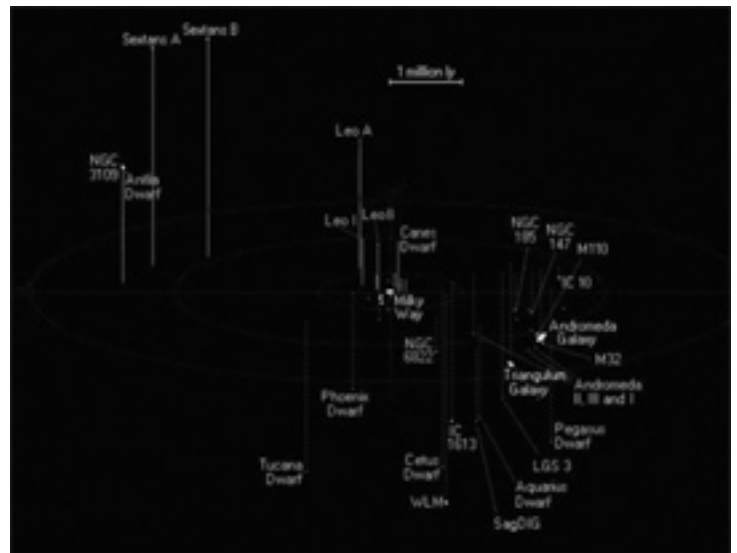
Since the Local Group galaxies are "close" they are moving together instead of flying apart. As you probably heard, the Milky Way and similar sized Andromeda Galaxies will collide at some point in the distant future.

At the same time below the equator (what would be spring for them), it is possible to view the two nearest mini galaxies the Magellanic Clouds. These are the largest of a number of dwarf galaxies orbiting the Milky Way.

We also have an opportunity to see much more distant galaxies. The Perseus-Pisces Super cluster is at a distance of 250 Mly. Abell 262 (NGC 708) is one of the groups of this supercluster.

Spring Galaxy Season

Galaxy groups are like a set of Russian Dolls, each fits inside the next. Similarly, the Local Group is a part of the bigger Virgo Super Cluster. Spring is the time to see the components that make up the Super Cluster. The distances to these galaxies are vast compared to the Local Group. M81/82 is the closest member at a mere 11 mly. The Group of Galaxies in Virgo comprises the largest part of the group. They are about 65 Mly away.



(c) Richard Powell used under Creative Commons Attribution Share License 2.5

The members and distances to the supercluster members are shown in the NASA drawing below. The Spring Galaxies comprise a band that runs from Leo north to Ursa Major and Draco. The densest portion is between RA 11 and 13 above Declination -20.

The north Galactic Pole (90 degrees from the plane of the galaxy) is located in Coma Berenices. Because the Milky Way is out of the way we get to see our distant neighbors. Unlike the galaxies of the local group these are moving away from us as the universe expands.

See Mark Wagner's article (pg. 2) in this edition for observing suggestions.

Get out and enjoy the season.

Many astronomers (myself included) look forward to the challenge and reward of the galaxy seasons. To observe them the best you have to get away from the city. The TAC list (www.observers.org) will give you suggestions of sites that are open to astronomers and with what restrictions. They will also give you an idea of where other amateurs are observing.

Many galaxies are just faint blobs, but others have interesting structure or proximity to other galaxies. I particularly call your

attention to the eye candy list (<http://observers.org/observing/eyecandy/index.html>) for a list of objects that are the next step beyond the Messier List.



NASA

Bring as much aperture as you can. However, do not think you need to pack the Keck to see anything. I had a ball in the dark skies of Arizona with just a 100mm Orion Short Tube. You will need charts and hopping techniques as taught in our star hopping classes (www.sjaa.net/bw). Unfortunately, you can not use filters to make galaxies more visible since they tend to emit strongest in the light the filters filter. There is no substitute for dark skies.

Being out also give you a chance to enjoy the more reliable and warmer spring weather.

Material from Wikipedia was used in the preparation of this article.

Treasurer's Report

SJAA 2007 year end statement

Gary Mitchell, Treasurer

Accounts	
CD 1	5,410.45
CD 2	5,000.00
CD 3	5,393.07
CD 4	5,215.84
Observatory Fund CD	3,235.84
Checking	2,786.74
PayPal	0.00
Petty Cash	335.80
Total accounts	27,377.74

Most of our money has been moved into higher interest bearing CD accounts. The plan was to have four 1-year CDs, spaced so they mature at three month intervals. The fourth CD has been purchased. From now on, excess monies in the checking (general) account will simply be added to these existing CDs as each matures.

Last year these CDs earned \$910.84 in interest, this year I expect it will be around \$1100. Eventually I'd like to see these completely pay for our liability insurance premium.

If anyone would like a more detailed report, let me know.
<treasurer@sjaa.net>

This report was prepared without audit from the financial records of the SJAA.

Silicon Valley Astronomy Lectures

Jill Tartar on April 23, 2008 at 7 p.m.

Dr. Jill Tartar from the SETI Institute will give an update on the search for intelligent life out there. As always, the talk is at Smithwick Auditorium on the campus of Foothill College. Free admission but parking is \$2. For more information call 650-949-7888.

For Sale By Club Member - Meade lx6/2120 10 inch F6.3 SCT. Asking Price \$1,000 (negotiable) Call Winston 510-785-9509

April Auction
Continued from page 1

the proceeds with SJAA to any degree you feel comfortable doing. Just ask us. All donations from the auction and the swap are tax-deductible, as SJAA is a 501(c)(3) educational organization.

The auction will begin at 1 p.m., and will run as long as needed, typically ending about 3 p.m.

After the auction, buyers and sellers settle up using one check to (or from) SJAA and claim their items. We do not handle charge cards. There is no fee for bidder cards, nor for entrance to the hall.

After the auction, material for the swap meet will be allowed into the hall. The swap also allows people some additional haggling time for those items that did not sell during the auction. Sellers are encouraged to bring items that would interest the astronomical audience such as astronomical, science, computer, or tech items. Vendors typically attend the swap as well selling their own merchandise. At the swap, each buyer pays the seller. We ask sellers to keep track of their sales, and ask they make a donation (10% is suggested) as during the auction. There are no table fees.

Part of running a successful auction is to make sure that there are people who are new to astronomy in attendance. We can use your help to make this so! Go to the auction website linked off the main page, download, and print an auction poster to display. Post them at the bulletin boards at work, at church, at your local library, or where you think people might be interested. Hand it out to a friend who has expressed interest in getting a telescope. You get the idea! Thanks for your assistance!

For more about SJAA, visit our web site at <<http://www.sjaa.net>>, or email to the above address. See you there!

SJAA Yosemite Public Star Party 2008

Jim Van Nuland

The annual SJAA Yosemite star party will be held on July 4-5, at Glacier Point in Yosemite National Park. Up to 30 people will be given free admission and camping, in exchange for two public events on Friday and Saturday evenings. The rest of the time we can be tourists.

We are expected to have at least one scope per two people, and to attend both star parties, not just Friday or Saturday. For these reasons, this is probably not suitable for a family camping trip.

The camping is rough by modern standards: no dining room, no showers, no hot water. Read about it on my Yosemite page at <<http://www.sjaa.net/school/yosemite.htm>>, or contact me with questions.

If you can tolerate the limitations, tell me the number of people you'll have, and the number of scopes that will be set up for the public. E-mail me at jvn@svpal.org, or phone 408-371-1307 10 a.m. to 10 p.m. Priority is given to SJAA members.

The moon will have been new on the previous Wednesday, so this is an excellent date; the moon will be down before the end of the public portion of the star party. Unfortunately, it conflicts with the GSSP star party July 2-5.

The Star of Bethlehem Revisited

Ernie Piini

At 6:30 a.m. February 1, 2008, I hurried out to my front yard to see and video record the conjunction of two of our brightest planets, Jupiter and Venus. This dazzling sight reminded me of the possibility that in 2 B.C.E. a similar event could have been recognized by the Magi as the Star of Bethlehem.

As legend goes three Wise Men, riding camels from Persia or Babylon, saw a bright star over the western sky that lured them to Bethlehem and the manger where Jesus was born. Even today the morning or evening sight of Venus or Jupiter can be dazzling. Their conjunction is even more spectacular!

John Mosely, in his article *When Was That Christmas Star?* noted that for such a conjunction, "Observers would have seen these two bright objects merge together as they approached the western horizon, appearing as a single 'star'". Roger Sinnott, an editor for *Sky and Telescope Magazine*, agrees. He describes the scene as of June 17, 2 B.C.E. at 9:15 p.m. "As the sun set over the broad Euphrates River, three Babylonian priests made their evening climb up the mammoth ziggurat temple

in ancient Sippar, to watch the stars come out. In the east the moon was rising, and in the west Venus shone high above the sunset. Just beside it Jupiter could be seen, dimmer and yellower. The priests had been watching the pair for some weeks now, but tonight there was a difference. The two planets were closer together than any one had seen them for many years. As the sky darkened this brilliant double star sank lower, the planets drawing nearer and nearer. At last, just above the horizon, they fused into one, gleaming like a great beacon over Judea to the west."

Although, this year's event took place in the eastern morning sky, to me it was also a dazzling sight. From my home in San Jose I captured the event on video tape with my Canon GL-1 camcorder. Jupiter appeared below and slightly to the west of Venus with a minimum separation of 0.6 degrees. This is slightly larger than the size of our moon at 0.5 degrees. On June 17, 2 B.C.E. the pair were within 0.04 degrees, about 15 times closer. The magnitude of Venus 2000 years ago was approximately -4.6 compared to -3.9 today and Jupiter's -1.8, still an alluring sight.

Telescope Loaner Program

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. It is one of the real jewels of being a member of the club. Scopes are available for all experience levels.

The inventory is constantly changing. As of this writing (early March) these scopes were available.

These scopes are currently available for loan.

Scope Number	Scope Description
43	4.5" f/8 Orion XT Dob
32	5.5" f/7.6 Signature Dob
23	6" f/8 Edmund Newt on EQ Mount
11	6" f/8 Orion XT Dob
34	8" f/10 Dynamax S/C
29	8" Celestron S/C Astrophoto
33	10" f/4.5 Orion DSE Dob
45	10" f/5 Dob, Earletron
7	12.5" f/7 Homemade Dob
But several scopes will become available in April	
40	8" Celestron Super C8+ S/C
6	8" f/10 Celestron S/C
36	8" f/6 Celestron Skyhopper Dob
46	Orion XT6 IntelliScope with Object Locator
48	C-8 Celestron Ultima

For up to date information please see the loaner program web page: <http://www.sjaa.net/loaners>

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New **Renewal** (Name only if no corrections)

I'll get the Ephemeris newsletter online

<http://ephemeris.sjaa.net> Questions?

Send e-mail to membership@sjaa.net

Membership Type:

- Regular — \$20
 Regular with Sky & Telescope — \$53
 Junior (under 18) — \$10
 Junior with Sky & Telescope — \$43

Bring this form to any SJAA Meeting
or send to the club address (above).

Please make checks payable to "SJAA".

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