



# SJAA EPHEMERIS

## The Celestial Tourist Speaks

Jay Freeman

Central California's record warm temperatures a few days before the 1998 winter solstice struck terror into the hearts of those who believe that the "law of averages" is the result of malevolent manipulation by malicious nature. Sure enough, the following weekend produced a cold snap and a hard freeze. Sunday morning saw snow, sleet, and hail down to sea level. Unfortunately for diehards, Saturday night was clear, so we had to go out and observe.

Fremont Peak temperatures were dropping fast toward freezing, and a moderate breeze drove wind-chill far lower, as I set up Harvey, my Celestron 14. Notwithstanding, the optical tube assembly was well thermally equilibrated by the time I was ready to observe: The time I spent sitting in the car, with the engine running and the heater on fricassee, was put to purposeful use. Wanting to look at some good stuff before my enthusiasm chilled out, I found  $\rho$  and  $\sigma$  Pegasii in the finder, not far from the southwest corner of the Great Square, then worked my way five or six degrees further south and west, to the field of Einstein's Cross.

With my 40 mm Vernonscope Erfle eyepiece delivering 98x, the mass that forms the gravitational lens whereby this object is imaged was not difficult to see, but after all, it is relatively nearby. The galaxy responsible is too faint to have an NGC or IC number, but CGCG 378-15 — for that is one of its several catalog labels — is nonetheless fairly easy for fourteen inches of aperture. And four hundred million light years

*Continued on page 4*

## SJAA Activities Calendar

### February

- 6 Star party at Fremont Peak.  
Sunset 5:37 pm, 62% moon rise 11:43 pm.
- 12 Houge Park star party  
Sunset 5:45 pm, 11% moon rises 5:06 am.
- 13 Star party at Coe, Peak.  
Sunset 5:45 pm, 5% moon rises 5:51 am.
- 20 Observational Astronomy class, Houge Park, 8 pm
- 26 Houge Park star party  
Sunset 6:00 pm, 89% moon sets 5:03 am.
- 27 General Meeting at Houge Park, 8 pm, Member's Night: Observing Plans, Targets of Opportunity

### March

- 6 Observational Astronomy class, Houge Park, 8 pm
- 12 Houge Park star party  
Sunset 6:13 pm, 24% moon rises 3:43 am.
- 13 Star party at Peak. Sunset 6:11 pm, 16% moon rises 4:25 pm.
- 20 Star party at Coe, Peak.  
Sunset 6:19 pm, 16% moon sets 9:57 pm.
- 26 Houge Park star party  
Sunset 6:26 pm, 78% moon sets 3:46 am.
- 27 General Meeting at Houge Park, 8 pm, It's a mystery!

24 hour News and Information:  
SJAA Hotline: (408) 559-1221  
Web Address:  
<http://www.seds.org/billa/sjaa/sjaa.html>

Fremont Peak star parties are not official SJAA Events. SJAA Insurance covers only SJAA members at SJAA sponsored events

## Highlights of a Saturday Night Star Party

Akkana Peck

- Being able to say "Damn, the seeing just went bad, I'm backing down to 300x" (from 580x, in my newly-recoated but not yet well collimated Cave 6").
- The grey foxes sauntering through the parking lot just ten feet from where we were set up. They spent most of the night over by the little house poking through someone's discarded bags looking for food.
- The amazing procession of white ovals following the Great Red Spot in the South Equatorial Belt on Jupiter.
- Mark Taylor's Santa outfit and string of red Christmas lights. He says the hat is very warm and he might just wear it at star parties year 'round.
- The Horsehead through Rashad's 8" with my H-beta. We only suspected B33 with my 6" and David's 128mm (though IC434 was more obvious than usual), but the dark notch was fairly obvious in the 8" Newtonian.
- Being able to see the Encke smudge in my 6", a first for me.
- The fearless raccoon pawing through the KFC box *in the cab* of the truck until I noticed it and shooed it away, and the other one who jumped up on the hood of the truck and sniffed around my eyepiece case until I turned and noticed it two feet away from me and shooed it down (afraid it might just make off with my 7.5mm Tak, raccoons being notoriously intelligent animals).
- The constant stream of

*Continued on page 3*

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## Mooning

David North

This month is special to deep sky folks: it has no full moon. Yet the two months adjacent both have two! This only happens every nineteen years, so enjoy.

Nevertheless, February is one of the "great" moon months. Why? Due to its inclined orbit, the Moon will be highest in the sky at the times of best viewing — in this case on the 25th, when we will be a few days after first quarter.

But the days surrounding this "ideal" day will be very good indeed, with the Moon seemingly almost straight overhead. Needless to say, under those circumstances we have the best chance of outstanding steadiness, and this should not be missed. Even people who normally ignore the Moon might want to pay attention this time of year... besides, it's something the whole family can do from the comfort of the back yard.

The days before the 25th are perhaps my favorites. On the 22nd, the Hyginus and Triesnecker rilles will be front and center in virtually ideal light.

There is probably no more striking area on the Moon for looking at rimae: Hyginus is easy in almost any scope, and most will show the tiny chain of craters inside the rille itself! If you haven't hunted this down, it's a must.

Triesnecker, on the other hand, is a very fine complex and is sometimes elusive due to seeing or aperture, but most scopes will dig it out. It's crosshatched and complicated, and a great deal of fun to trace out if you have the patience.

A perennial favorite, The Straight Wall, will also be just about ideal tonight. Can you see nearby Rima Birt? What does it remind you of?

On the 23rd, the Apennine mountains really start to open up, and they are a spectacular view in themselves. But just inside them, toward the crater Archimedes, a very fine complex of rilles can be

spotted. They are named Hadley and Bradley, after nearby peaks, and are the only area of rilles to be inspected by the Apollo astronauts.

The crater Plato shows well that night, up in the Alpine Mountains. It's something of a challenge to spot the five major craterlets in the dark, smooth floor. The nearby Alpine Valley may give you a glimpse of it's central rille, a very hard target. It was showing the previous night, but I've had more luck with slightly raised illumination such as this night will offer. However, trying even tomorrow night may give good results, and this is always a feather in one's cap.

The 24th is showtime, big time. Copernicus will be just about

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### Watch it emerge as the evening goes by ... things really do change on the Moon!

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ideal, and there is nothing else on the Moon like it, especially seen high in the sky. It's surrounded by an incredible field of secondary craterlets, tiny dots that form lines and patterns all around. The crater itself has one of the best forms seen on the Moon, and you can normally pick out the collapsing terraces on the walls. The several central peaks are also clearly defined.

In the general area around the crater you can find all manner of domes, rilles and other lunar features too numerous to mention. If you haven't hunted this area, tonight's probably the best theoretical night of the year.

Also, this should be one of those nights where Sinus Iridum is "hanging off on the dark side." It will be only partially illuminated, and the massive walls will extend into the darkness. This is easily seen in any scope, and gives you a good idea

why this area was named the "Bay Of Rainbows." Watch it emerge as the evening goes by... things really do change on the Moon!

Then comes the highest elevation of the month, on the 25th.

The main area of concentration should be Palus Epidemiarum, the Marsh of Diseases. The entire floor of this southern area is cracked with rilles, and you should still be able to trace most of Rima Hesiodus crashing through the mountains to join the complexes inside. It's what I call "rilleville," and when it's showing well it's one of the most memorable areas for any scope. I've managed to nail everything in and around it in a 4.5-inch newt with a great deal of patience, so don't be dismayed if you don't see anything at first. Hang with it.

If that's not enough for you, travel a bit north to Mare Humorum, another extremely rich area. Later in the evening the light will be getting very good on Gassendi, which is a marvelously complicated nearly sunken crater (say that five times fast). But the incredible arcing Rimae Hippalus, extending from the southern rim of Humorum, should be well seen all night.

The next night, revisit the western edges of Mare Humorum. You'll be surprised how much can be found in the way of interesting rilles, craterlets and other features. This entire area of the Moon is far more rich than its better known eastern complements, but for some reason is largely ignored by most amateurs.

There are several "close approach" events during the month (Moon near this planet or that star) but none of them outstanding. Further, most librations this month show very little promise of any particularly interesting views of the "far side."

This simplifies things a little: it means we can concentrate mostly on "normal" observing and reserve the "special events" for later in the year.

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## The Shallow Sky

Akkana Peck

February should have some lovely planet groupings in the western sky at sunset (more on that later), but the big news is Mars.

This month marks the real beginning of Mars' 1999 apparition. During February, Mars will double in brightness, and by month's end it will show a disk 10" across, nearly one third the size of Jupiter. Start exercising your "Mars eyes" now, getting practice in identifying the features, so that you'll be ready to see all the detail you can when the planet reaches opposition just two months from now. By now, quite a few features such as the north polar cap, Hellas, Syrtis Major, and more should be visible through a small telescope. It's high summer on the northern hemisphere of Mars (the solstice was January 29), so the north polar cap should be shrinking; can you see it change over a period of a few weeks? Ambitious planetary observers might want to look for orographic clouds over the Tharsis volcanos; use a violet or blue-green filter, and compare with an unfiltered view.

You can get more information on observing Mars at the ALPO Mars site: <http://www.lpl.arizona.edu/~rhil/alpo/marstuff/marsapp.html>

One challenge of observing Mars is the difficulty of keeping track of the planet's rotation com-

bined with its orientation in the telescope eyepiece. It's easy to get lost and not know which feature you're looking at (is that white spot the polar cap, or Hellas on the limb?) A computer program can help -- some programs (Guide, for one) calculate the planet's rotation and show features in their correct orientation. In the absence of a computer, I've found a Mars globe much more useful than a static map. The best globe I've seen is made by Replogle and comes in a set of three (the other two are the earth and

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### Start exercising your "Mars eyes" now

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moon) for a very reasonable price when you can find it at all; I found mine at the children's store in the Great Mall.

Moving on to other planets:

Saturn still shines high in the evening sky. It's not too late to get a good look at the ringed planet. The rings are still opening, and we'll get an even better show next time around than we did this time.

Venus continues the excellent show it gave last month, starting low in the evening sky but gaining altitude rapidly to catch up with Jupiter around the evening of Febru-

ary 23, when they are only 11' apart (less than half the moon's diameter). Its phase is gibbous.

This may be the last month for a while to get a good look at Jupiter, which is already getting low at sunset. It makes a nice grouping with Venus, the two brightest planets competing for our attention in the early evening sky.

Mercury, too, has returned to the evening sky. At mid-month, it will shine at magnitude -1 low in the sunset sky; but by the end of February the planet will be near its peak elevation for this apparition, and showing just slightly more than 50% of its disk illuminated. On February 16, use binoculars to try spotting Mercury just above a very young crescent moon.

Uranus and Neptune are close to the sun and are not observable this month.

Pluto is about to cross Neptune's orbit to regain its place as the farthest planet from the sun, which will happen on February 11th at 2:08am. This is your last chance for 230 years to see "Planet X" as the eighth rather than the ninth planet from the sun. Unfortunately, it's still quite close to the sun, so expect quite a challenge in identifying it.

Asteroid 4 Vesta reaches opposition in eastern Cancer on February 4th. It will be magnitude 6.2, possibly barely visible with the naked eye from a dark site such as Fremont Peak or Coe, and should be an easy target in binoculars.

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## Saturday Night Highlights

*Continued from page 1*

Geminid meteors, up to about Sirius magnitude.

- The luminous contrails making dim lines across the sky all night. These should indicate poor transparency (lots of moisture in the air) but that didn't seem to be a problem.

- Three lanes in M82 in a Short Tube 80. M31 at 20x, with the dark lane and both companions easily visible, in the same scope.

- Coyote karaoke from the direction of the Peak.
- 50 degrees at night, in December.
- The Merope nebula filling the field in the Tak FS128 with a 30mm eyepiece. I've never seen the nebulosity extend so far.
- Great company.

## The Celestial Tourist visits Einstein's Cross

*Continued from page 1*

is pretty close. Why, not only was there multi-celled life on Earth when that chilly evening's photons left home, there were even critters that a generous soul might have called vertebrates. Yet the quasar whose light is refocused by this prominent piece of lumpy darkness is much farther off — CGCG 378-15 is acting as a long, long-distance microscope.

At 98x I could not see any real sign of the cross, though it was clear that the galaxy became rather rapidly brighter at the middle. I wasn't surprised, for the structure is small and faint — only a few arc seconds wide — and the galaxy itself provided a background of light pollution more than sufficient to hide it. Fortunately, there was a fix that did not require litigation by the Intergalactic Dark-Sky Association — jam on the magnification — and I did exactly that. Replacing the big Erfle with a 12 mm Brandon gave 326x, and spread out the faint smudge of the galaxy sufficiently to render it completely invisible.

So I promptly got lost. Between jiggling the telescope when I changed eyepieces, occasional wind shudders, and the usual confusion about which control-paddle button moves things which way and where did they put north this evening anyhow, I soon found myself half a degree or more from the target, with no hope of getting back.

Humph! Back in went the Erfle, and back I went to the finder to reacquire the field. Oh... there it is... double humph! It took several eyepiece switches between the Erfle and the Brandon, and a good deal of practice, star-hopping from several prominent and easily recognizable stars out to where the galaxy was, before I could set on it confidently at the higher magnification. Furthermore, I had to swap eyepieces several times more, to verify the positions of a few much fainter stars

that were confusing me. Finally I established to my satisfaction that I had the center of CGCG 378-15 in the center of my 326x field. And what do you know — there was something there.

The figure of the giant gravitational lens is less than perfect. The image of the distant quasar is not a good representation of the object itself; rather, there are four bright lobes distributed symmetrically around a central point, rather like the wide ends of a cross whose arms have equal lengths. Many of us have seen the images of stars similarly made complicated by poor seeing, and some of us have encountered optics that can create such views even when the air is steady. CGCG 378-15 is such an optical system.

I cannot claim to have identified the separate sub-images individually, resolved from one another as if they were components of a faint double star. Indeed, much of the time I could not see anything at all — seeing jitter did not permit continuous observations at 326x. But when seeing steadied, it was clear that there was a small structure at the heart of the galaxy, just a few arc-seconds across, and I could tell that it had an irregular shape. I don't think there is much doubt that I was seeing the combined lobes of Einstein's Cross. It would be fun to reexamine the object on a night of truly fine seeing, perhaps with more magnification. I suspect that Harvey is capable of showing it with a little detail.

Most of the reports of seeing Einstein's Cross that I know of, have involved Dobson-mounted Newtonians with apertures substantially larger than 14 inches, and some extremely good observers have had trouble seeing more than one or two of the lobes of the cross at those apertures. Therefore, I wish again to stress that I did not see any of the components separately — in double-star terms, I had an elonga-

tion (actually, several), not a split. I should also mention that it certainly helped to have a driven telescope, so that I could sit in comfort — well, in what would have been comfort if I hadn't been a bit chilly — waiting for the seeing to steady, and trying to use averted vision in just the right way, rather than having to jiggle a big Dobson from the top of a tall ladder, while an elusive and all but invisible object dashed pell-mell for the far horizon.

Yet what a thing to see, even if only at the limit of visibility. The quasar whose image forms the cross is some eight billion light years away. The photons I saw left their source long before our solar system was formed, probably long before most of its heavy atoms were even synthesized. When they originated, everything we now see about us was for the most part primordial star-stuff, hydrogen atoms formed in the Big Bang, awaiting nucleosynthesis in stars now long dead, followed by redispersal into the void as planetary nebulae or supernova remnants. One day a few of them, now mere animate debris left over from the condensation of a younger and smaller star, would look back into the abyss, seeking a far-off, distorted glimpse of what the cosmos was like when they were young, and wondering how it would all turn out when they were old.

Such is Einstein's Cross.

### Astronomical Pocket

The SJAA is selling these handy 1999 calendar/reference booklets for \$10 each as a fundraiser for the club's telescope loaner program. These pocket-sized "week at a glance" calendars are loaded with astronomical ephemerides, anniversaries, and amusing trivia.

Our custom SJAA edition includes club contact information, notable club anniversaries, and all of our regular meeting dates, class dates, and star parties already

## The Central Bulge

### From the Editors

Jane Houston

I've been a member of the SJAA for less than a year now, since May, 1998, in fact — according to the mailing label on my Ephemeris. I'd like to tell you how I came to be a member. I had been reading these fantastic lunar postings on AOL's Astronomy Forum by an unknown (to me) amateur astronomer who called himself Timocharis. Timocharis is a nice little crater a third of the way between Erathosthenes and Plato, and it's best seen on the the eighth day, right after the first quarter moon. Being something of a lunatic myself, I enjoyed the writings of this Timocharis, and told him so. Turns out we had some mutual acquaintances. Soon I was reading the online Ephemeris and helping David with some logistics in getting John Dobson to speak to the SJAA in 1998. You can read all about that talk and the other adventures of the day in the May 1998 Ephemeris. I joined the club that night. A great newsletter and some great folks — that's what drew me to the SJAA.

I was delighted to see so many telescopes out before the meetings, and to see the depth of experience and number of telescopes out for the public star parties at Houge Park, and the impressive school star party agenda. But I was just as impressed with the talented writing by club

### Diaries Still Available

entered. Your \$10 is treated as a tax-deductible donation.

APDs will be available at club events (meetings, classes, and Houge park star parties) until they are gone. Contact Mark Taylor at [mctaylor@mindspring.com](mailto:mctaylor@mindspring.com) or (408)737-9135 if you would like one but do not expect to make it to an upcoming club event.

For more details on the APD, see the longer article which ran in the January Ephemeris, or follow the APD link on SJAA's web site.

members in the Ephemeris. We are lucky to have so many talented observers who take the time to write for the rest of us.

I think Mojo and I will have alot of fun co-editing the Ephemeris, and I hope our only dilemma will be to have to decide which of the many submissions to include each month. For those other newer members, like me, please consider penning an article and submitting it. It's easy and your contributions will be most welcome! My special request goes out to some of our more youthful members. I'd love to have some kids write about their astronomical adventures. Finally, I'd like to give a great big "Thank You" to David for the great job he has done pulling together such an informative newsletter for the past couple years. It's the one part of the SJAA that

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### The moral of the story is: *go observing more often!*

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touches every one of us!

Morris Jones

Elsewhere in this month's issue, Akkana Peck talks about an extraordinary December Saturday night at Fremont Peak State Park. If you're like me, you're asking, "Why don't I ever get nights like that?"

The interesting thing about that remarkable evening is that very few astronomers were actually at the park with their telescopes that night. The weather for the night looked early on like it *might* not be worth the trip.

I've come to learn that the "lucky" observers who happen upon the really great sessions are the ones who take the trouble to go out on those marginal nights. Sometimes you can foresee great conditions, but it's difficult to predict having just the right combinations of stable air

and great transparency from reading the public weather forecasts. And even then, you know the track record the professional meteorologists have forecasting Bay Area weather.

The lucky observers make opportunities by going out more often!

After the glowing reports from that legendary December evening, I found it interesting to see Fremont Peak's southwest parking lot crammed to the gills for a third-quarter moon in January. The day looked promising, with a few high cirrus that might clear. But the night itself was mostly awful, about magnitude four transparency. Sirius looked kind of like the Eskimo Nebula.

The moral of the story is: *go observing more often!*

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I just read Dave Kriege and Richard Berry's excellent book on *The Dobsonian Telescope*, and one piece of advice hit me really hard. "Don't sell your old telescope," they say. "Over the years we have listened to dozens of serious observers wish they once again had their old scopes."

Back in April of 1998, when I was a much younger man, I placed an order for an Astrosystems Telekit Dobsonian. In April the estimate was for about a three-month wait for the kit. Needing the cash to buy my telescope and mirror, and not having spent a lot of time lately with my workhorse Celestron 8", I found an eager newcomer and sold my telescope.

All I'm left with now is the joy and satisfaction of having passed an excellent observing instrument into the hands of a new observer (who may or may not even be using it). Three months have since turned into eight, and my kit may be arriving any day now. How I wish I had read that piece of advice back in May!

*Clear skies!*



## Island Universes - Starhopping through the Virgo/Coma Realm of Galaxies

Jane Houston

We ended our most recent observing session on a chilly Fremont Peak January morning by observing galaxies in Leo. Leo already? That means it's almost Virgo time! For those of you planning to complete your Messier objects by tackling Virgo, here is a helpful hop. The most important tool is to know your field of view. The rest is easy!

From Spica (67 A Virginis mag 0.97) go 21 degrees north to mag 2.83 47 E Virginis or Vindemiatrix — enjoy the bright yellow-white spectrum G8 yellow giant now — we are about to enter the dark and majestic world of our local group neighbor.

First a few stops on the way: a little arrow shaped asterism aligns the observer toward the west northwest, the direction we will travel tonight. Just follow this arrow. This is an easy starguide, easy to get your alignment, and to get back on track when lost.

Struve 1689 a nice yellow (mag 7.1) and blue double (mag 9.4) is our first treasure in this hunt. It's 1 ½ degrees NW of Vindemiatrix. Get used to your field of view on this hop! 29 arcsec separates these two.

NGC 4762 and 4754 are a fantastic first deep sky find, and can be seen in the same field of view with Struve 1689. 62 at mag 10.3 is a dainty edge-on spiral and mag 10.6, 54 is round galaxy with a bright and tight nucleus. NGC 4694 is faint and longish galaxy mag 11.4

Half a hop away is M60 (NGC 4649 at mag 8.8) and NGC 4647 (mag 12.03), M59 (NGC 4621 mag 9.79) and 4638 — all 4 in the same field of view. NGC 4606? I don't think so. Maybe? Wishful seeing? Well I tried! Your turn!

1 degree NW from M59 is M58 (NGC 4579, mag 9.78) — a nice barred spiral glowing in the dark.

1/2 degree SW from M58 are the interacting galaxies called the Siamese Twins, NGC 4567 and

4568. At 10.8 and 11.3 magnitude, these dim large puffs are apparently attached. Yes, connected at the arm — the spiral arm that is.

M89 (NGC 4552 mag 9.81) is 1 ½ degrees N NW of the twins. That's 2 hops for me. An elliptical with an intense core.

M90 (NGC 4569 mag 9.48) and IC 3583 — an oval spiral with a small dim mag 13.6 irregular companion.

Between M90 and M87 are a lot of objects. Time for a Messier break anyway!

Back down to M58. First NGC 4564, the Siamese twins again, NGC 4528 (a star - looks like), 4503

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### We are now entering the home stretch, galactically speaking.

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and 4452, 4429 and 4440.

Now back to M90 for the hop to M87, 1 degree SW from M90. Off we go to M87.

M87 (NGC 4486 mag 9.56) — A radio and X-ray emission source. What you see is not all you get! This is the center of the Virgo Cluster of Galaxies. There are many globular clusters within M87, as many as 4,000!

Companions to M87 — NGC 4486B, 4476, 4478 and 4486A. All in the same field of view arranged in a mag 10 to 13 semi-circle.

1 degree NW of M87 are elliptical twins M86 (NGC 4406 mag 8.9) and M84 (NGC 4374 mag 9.1). We are now entering the home stretch, galactically speaking.

On the way up to the next target, which will be M88 are a fantastic series of pairs of objects. These are also known as the Markarian Chain of Galaxies. You might not see them all, but follow the chain to M88. NGC 4402 is first. Then mag 10.8 NGC 4435 and mag

10.2 4438 — Copeland's eyes at 4.3 arcmin separation. IC 3393 is next. Then mag 10.2 NGC 4458 and 4461 at mag 11.0. Then 4473 was pretty and bright at mag 10.2 — a trio with mag 10.4 NGC 4477 and mag 11.0 4479. Then NGC 4447 and NGC 4446. NGC 4459 looks like a planetary to me at mag 10.4. Fuzzy and round next to an 8th mag star. A trio with dimmer NGC 4474, and NGC 4468 which was a blurry diffuse speck of light. IC 3442 & 3432 are next. See HB Atlas chart E10.

M88 (NGC 4501) with its large elongated spiral is a welcome sight after the dimmits. Mag 9.6 is bright at this point.

M91 (NGC 4548 at mag 10.2) and 5671 are the last in my hop this-a-way. Next is the "back-door" entry to the realm.

Off to 6 Coma to try Messier's 98, 99 and 100 that-away.

Appetizers included Melotte 111, Arcturus to 42 A Comae Berenices. To mag 7.5 M53 (NGC 5024) and NGC 5053, first seen by Herschel. To 35 Coma, a nice tight double. One ¾ degree hop from 35 Coma to M64. And M3 (NGC 5272, mag 6 globular) while I'm in the neighborhood! And the North Galactic Pole, 1/2 degree from 31 Coma. Between 31 and 43 Coma is the Coma Berenices Galaxy cluster. I see plenty of dim starry glows — you can too when you look up there!

30 Coma is a nice double. NGC 4725 is a 2 degree hop South — a nice face-on Mag 9 barred spiral. Three degrees N NW takes you to NGC 4565 Berenices Hair Pin, mag 9.6. This is one of my favorite edge-on galaxies, with a wide and prominent dust lane and lots and lots of mottled texture! NGC 4631 is another gorgeous edge-on galaxy with a little companion not too far away in Canes Venatici.

Hop hop hop and then over to

*Continued on page 7*

## School Star Parties

Jim Van Nuland

The 1998 series wrapped up with an event at Andersen Elementary in SE San Jose. Under a superb sky, we showed many objects to an appreciative crowd. In addition to the students, there were many local residents who walked in on seeing the instruments in the school yard.

After a break over The Holidays, events resume in late January. The dates are clustered around the 1st-quarter moon, because it is especially interesting to this clientele.

Jan.25 - Blue Hills Elementary, S.J.  
 26 - Holly Oaks Elementary, S.J.  
 27 - Lane View Elementary, S.J.  
 Feb. 3 - Bernal Middle, S.J.  
 9 - Briarwood Elementary, S.J.  
 19 - Sunnyhills Park, Milpitas  
 23 - Dove Hill Elementary, S.J.  
 24 - Provisional, Belmont, CA.

School events begin at 6:30 or 7 pm, and are usually over by 9, so you can get to bed in time for work the next day. If you can help at some of these events, contact Jim Van Nuland at [jim.van.nuland@sjpc.org](mailto:jim.van.nuland@sjpc.org) for details. Or phone 408-371-1307 10 am to 10 pm.

If you didn't contact Jim, call on the afternoon of the event to find out whether there's been a cancellation.

## Let's go to the Hop

*Continued from page 6*

Denebola, and on to 6 Coma...

M 98 (NGC 4192) is easy at mag 10.1, in the same field as 6 Coma. A nice tight nucleus surrounding an elongated shape.

M 99 (NGC 4254, mag 9.9) is one degree to the E SE. Like M33 in shape. A face-on spiral.

M 100 (NGC 4321 mag 9.3). Hop up from 6 Coma. A beaut! The largest spiral in Virgo and easy to see. Heck that wasn't so hard! And it sure was fun!

## Celestial Calendar February, 1999

Richard Stanton

### LUNAR

PHASE:	Time	Date	Rise	Trans	Set
LQ	03:58 PST	08	00:40	06:13	11:41
NM	22:39 PST	15	06:36	12:00	17:29
FQ	08:43 PST	22	11:08	18:09	00:10

No Full Moon in February

### NEARER PLANETS:

**Mercury — Dist:1.26 A.U., Mag. 2.4**

Date	Rise	Trans	Set	R. A.	Dec.
07	07:23	12:35	17:48	21:34.0	-16:35
17	07:29	13:04	18:41	22:42.7	-09:27
27	07:22	13:24	19:26	23:42.4	-01:10

**Venus — Dist:1.40 A.U., Mag. 4.2**

Date	Rise	Trans	Set	R. A.	Dec.
07	08:18	13:56	19:35	22:55.9	-08:22
17	08:08	14:02	19:57	23:41.4	-03:19
27	07:57	14:07	20:19	00:26.1	+01:54

**Mars — Dist:1.01 A.U., Mag. +0.5**

Date	Rise	Trans	Set	R. A.	Dec.
07	23:40	05:11	10:39	14:11.9	-11:02
17	23:16	04:44	10:09	14:24.2	-12:02
27	22:48	04:14	09:37	14:33.7	-12:47

**Jupiter — Dist:5.75 A.U., Mag. -2.1**

Date	Rise	Trans	Set	R. A.	Dec.
07	08:56	14:55	20:54	23:57.4	-01:32
17	08:22	14:24	20:25	00:05.3	00:39
27	07:48	13:53	19:57	00:13.6	00:16

**Saturn — Dist: 9.69 A.U., Mag. +0.9**

Date	Rise	Trans	Set	R. A.	Dec.
07	10:15	16:45	23:16	01:48.2	+08:37
17	09:37	16:09	22:40	01:51.0	+08:55
27	09:00	15:33	22:05	01:54.4	+09:16

SOL Star Type G2V Intelligent Life in System ?

Hrs of

Dark.	Date	Rise	Trans	Set	R. A.	Dec.
10:31	07	07:06	12:22	17:39	21:22.1	-15:24
10:11	17	06:54	12:22	17:50	22:01.5	-12:06
09:49	27	06:41	12:20	18:00	22:39.7	-08:28

### ASTRONOMICAL TWILIGHT:

	Date	Begin	End
JD 2,451,	216	07 05:37	19:07
	226	17 05:27	19:17
	236	27 05:15	19:26

### SIDEREAL TIME:

Transit Right	07	00:00 = 09:00
Ascension at	17	00:00 = 09:39
Local Midnit	27	00:00 = 10:19

DARKEST SATURDAY NIGHT: 13:Feb-1999

Sunset 17:45  
 Twilight End 19:13  
 Moon Set 15:25  
 Dawn Begin 05:32  
 Hours Dark 10:19

## Comet Comments

Don Machholz

Both Periodic Comet Jager and Periodic Comet Harrington-Abell can be found against the background of the Winter Milky Way. Also up nearly all night long are Comets Linear (1998 M5) and Williams.

**C/1998 X1 (ODAS):** This comet was discovered by a German Asteroid Survey on Dec. 15. It remains faint.

**P/1988 VS24 (LINEAR):** Here's another instance of an object

being identified as a comet after appearing as an asteroid at discovery. This comet orbits the sun every nine years, with a perihelion distance of 3.4 AU.

**C/1998 Y1 (LINEAR):** Found on Dec. 22 by the LINEAR program, this comet will remain faint.

**P/1998 Y2 (Li):** The Lick Observatory Supernova Search program imaged this comet in the field of NGC 1041. It was found by

Weidong Li. The comet orbits the sun every 15 years and remains faint.

**COMET HUNTING NOTES:** In which month do amateur astronomers visually discover the most comets? Of the 79 comets found in the past 24 years, 12 were found in July while 10 were found in January. In last place is both February and April with three finds each.

## Ephemerides — Epoch 2000, Oh UTC

### C/1998 M5 (LINEAR)

Date	R.A. (2000)	Dec	El	Sky	Mag
01-12	19h02.9m	+44°45'	67°	M	9.3
01-17	19h06.2m	+46°41'	68°	M	9.2
01-22	19h09.6m	+48°53'	70°	M	9.2
01-27	19h13.1m	+51°21'	72°	M	9.1
02-01	19h16.9m	+54°07'	75°	M	9.1
02-06	19h20.7m	+57°12'	77°	M	9.0
02-11	19h24.7m	+60°37'	79°	M	9.0
02-16	19h28.9m	+64°21'	82°	M	9.0
02-21	19h33.2m	+68°26'	84°	M	9.0
02-26	19h37.8m	+72°49'	87°	M	9.0
03-03	19h42.9m	+77°30'	89°	M	9.0
03-08	19h49.2m	+82°24'	90°	M	9.0

### C/1998 P1 (Williams)

Date	R.A. (2000)	Dec	El	Sky	Mag
01-12	12h21.2m	+03°34'	108°	M	10.3
01-17	12h04.7m	+08°13'	118°	M	10.3
01-22	11h44.9m	+13°22'	130°	M	10.4
01-27	11h21.7m	+18°49'	141°	M	10.4
02-01	10h55.4m	+24°13'	151°	M	10.6
02-06	10h26.8m	+29°08'	159°	M	10.8
02-11	09h57.4m	+33°16'	160°	M	11.0
02-16	09h28.7m	+36°27'	155°	E	11.2
02-21	09h02.1m	+38°44'	148°	E	11.5
02-26	08h38.7m	+40°15'	140°	E	11.8
03-03	08h18.7m	+41°11'	132°	E	12.1
03-08	08h02.3m	+41°43'	124°	E	12.4

### P/1998 U3 (Jager)

Date	R.A. (2000)	Dec	El	Sky	Mag
01-12	06h29.3m	+35°44'	160°	E	10.5
01-17	06h25.7m	+34°38'	156°	E	10.5
01-22	06h22.8m	+33°28'	152°	E	10.5
01-27	06h20.6m	+32°17'	147°	E	10.5
02-01	06h19.3m	+31°05'	142°	E	10.5
02-06	06h19.0m	+29°53'	137°	E	10.5
02-11	06h19.5m	+28°42'	132°	E	10.6
02-16	06h20.9m	+27°34'	127°	E	10.6
02-21	06h23.1m	+26°27'	123°	E	10.7
02-26	06h26.2m	+25°24'	119°	E	10.7
03-03	06h30.0m	+24°22'	115°	E	10.8
03-08	06h34.5m	+23°23'	111°	E	10.8

### 52P/Harrington-Abell

Date	R.A. (2000)	Dec	El	Sky	Mag
01-12	07h12.0m	+39°46'	162°	E	10.5
01-17	07h09.0m	+39°03'	159°	E	10.5
01-22	07h06.4m	+38°13'	156°	E	10.5
01-27	07h04.6m	+37°16'	153°	E	10.6
02-01	07h03.7m	+36°13'	149°	E	10.6
02-06	07h03.8m	+35°07'	145°	E	10.7
02-11	07h04.9m	+33°58'	140°	E	10.7
02-16	07h07.0m	+32°49'	136°	E	10.8
02-21	07h10.1m	+31°38'	132°	E	10.9
02-26	07h14.1m	+30°28'	129°	E	11.0
03-03	07h18.9m	+29°19'	125°	E	11.1
03-08	07h24.5m	+28°11'	121°	E	11.2

## Orbital Elements

### Object:

**Williams**  
 Peri. Date: 1998 10 17.838  
 Peri. Dist (AU): 1.14674 AU  
 Arg/Peri (2000): 294.473 deg.  
 Asc. Node (2000): 156.379 deg.  
 Incl (2000): 145.730 deg.  
 Eccen: 1.0  
 Orbital Perio: Long Period  
 Ref: MPEC 32410  
 Epoch: 1998 10 17  
 Absol. Mag/"n": 7.5/4.0

### LINEAR (M5)

1999 01 24.5733  
 1.742213 AU  
 101.2873 deg.  
 333.3766 deg.  
 082.2285 deg.  
 1.0  
 Long Period  
 MPC 32410  
 1999 01 22  
 5.5/4.0

### Object:

**Harrington-Abell**  
 Peri. Date: 1999 01 27.8772  
 Peri. Dist (AU): 1.755993 AU  
 Arg/Peri (2000): 138.8996 deg.  
 Asc. Node (2000): 337.2882 deg.  
 Incl (2000): 010.2186 deg.  
 Eccen: 0.542909  
 Orbital Period: 7.53 years  
 Ref: MPC 32595  
 Epoch: 1999 01 22  
 Absol. Mag/"n": 8.6/4.0

### Jager

1999 03 07.7714  
 2.152631 AU  
 179.4942 deg.  
 303.8178 deg.  
 019.0944 deg.  
 0.652672  
 15.4 years  
 MPC 32866  
 1999 03 08  
 6.5/4.0



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### Telescope Loaner Program Status

Mike Koop

All scopes are available to any SJAA member, contact Mike Koop by email ([koopm@best.com](mailto: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 member's 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:
7	12.5" Dobson	Morris Jones
8	14" Dobson	Ralph Seguin
24	60mm Refractor	Akkana Peck
27	13" Dobson	George Cooper
30	7" f/9 Newt/Pipe Mount	David Manley

### 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	Note
1	4.5" Newt/ P Mount	Kevin Lemay	4/8/99	
3	4" Quantum S/C	Manoj Khambete	3/5/99	
15	8" Dobson	Al Case	1/16/99	
16	Solar Scope	Bill Arnett	3/5/99	
18	8" Newt/ P Mount	Mike Rupe	1/4/99	
21	10" Dobson	Eric Anderson	3/5/99	
23	6" Newt/ P Mount	Monica Patterson	2/13/99	
31	8" f/8 Dobson	Jamie Dillon	4/1/99	

### Extended Scope Loans

These are scopes that have had their loan period extended. If you are interested in borrowing one of these scopes, we will contact the current borrower and try to work out a reasonable transfer time for both parties

#	Scope Description	Borrower	Due Date	Note
2	6" f9 Dob	John Paul De Silva	?	
4	60mm Refractor	Del Johnson	Indefinite	
6	8" Celestron S/C	Bud Wittlin	2/28/99	
9	C-11 Compustar	Paul Barton	Indefinite	
19	6" Newt/P Mount	Ran Talbott	1/31/99	
26	11" Dobson	Raymond Brinson	1/11/99	
28	13" Dobson	Ramin Ghafouri	3/12/99	
29	C8, Astrophotography	Alexander Koczur	3/1/99	

### Waiting List

16	Solar Scope	Dave North
6	8" Celestron S/C	Slone Wiktorowicz
15	8" Dobson	Ron Gerber

Do you have some space to store a scope or two? Please E-mail or call me. Thanks.

### Periodical Publication Statement

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