



# SJAA EPHEMERIS

## Wind and Nebula Akkana Peck

Saturday afternoon was overcast in the bay area, and star party prospects looked grim. Still, it looked like there might be a few patches of blue sky visible to the south, so, hearing that a few optimists were planning to be at Fremont Peak just in case the weather cleared, and wanting a chance to field-test version beta 2 of the Dobsonian mount I've been building for my 6" f/8 Cave, I decided to give it a try.

About halfway there, it became clear (literally!) that this was the right decision, as the band of clouds ended abruptly just south of San Jose, and the skies were clear all the way to Fremont Peak.

As usual, I enjoyed the twisty road up to the Peak, at least up to the point where my car's engine suddenly lost power. I limped, sputtering, the rest of the way up the hill (if I'm gonna break down, I'd rather do it at the observing site where I can set up my 'scope and socialize with other astronomers while I work on the car :-), arrived at the top and discovered that the problem was only a loose plug wire. Whew!

Darkness fell, and the wind picked up. Planetary observing was difficult, since the gusty wind shook the telescope and made the air unsteady. (Beta 3 of my Dob mount will include more damping to keep the 'scope stable.) Galaxies weren't much better - 7331 was faint and ragged in the 6" compared to previous views, and I couldn't find 891 at all. The bright white light coming from the vicinity of the radio towers (bright enough to cast obvi-

## Activities Calendar

### February

- 1 Star party, Fremont Peak. Sun set 5:32 pm, 36% Moon rise 2:14 am.
- 8 Star parties, Henry Coe and Fremont Peak. Sun set 5:39 pm, 4% Moon set 7:22 pm.
- 14 Star party, Hogue Park. Sun set 5:47 pm, 58% Moon set 1:51 am.
- 15 Observational Astronomy class, Hogue Park. 8 pm. 8pm. 8pm.
- 22 General meeting, Hogue Park, 8 pm. speaker TBA. Board Elections. Board meeting at 6:30 is open to all members.
- 28 Star party, Hogue Park. Sun set 6:01 pm, 63% Moon rise 0:07 am.

### March

- 1 Star party, Fremont Peak. Sun set 6:01 pm, 50% Moon rises 1:00 am. Also Halls Valley Astronomy Group.
- 8 Star parties, Henry Coe and Fremont Peak. Sun set 6:07 pm, no Moon.
- 14 Star party, Hogue Park. Sun set 6:14 pm, 42% Moon set 0:38 am.
- 15 Observational Astronomy class, Hogue Park. 8 pm.
- 22 General meeting, Hogue Park, 8 pm. speaker TBA. Board meeting at 6:30 is open to all members.
- 28 Star party, Hogue Park. Sun set 6:27 pm, 77% Moon rise 10:59 pm.
- 29 Star party, Fremont Peak. Sun set 6:26 pm, 66% Moon rise 11:54 pm.

24 hour News and Information:  
SJAA Hotline: 408-559-1221

## Fremont Peak Again Jay Freeman

I sometimes think the winter Milky Way is the galaxy's attic; you find the darndest stuff hidden in odd corners here and there. I was at Fremont Peak State Park, near San Juan Bautista, California, on the night of 7-8 December, 1996, having cast a weather eye to the sky (all across the North Pacific, courtesy of satellites and the worlds-wide web) and decided that the front that stretched from the northern California coast all the way to Hawaii was going to stay put for just a few more hours. It did, despite the best efforts of a buffeting wind to drive it closer, and I was rewarded with some of the most peculiar and wonderful sights.

I spent a while chasing down the "other" supernova remnant in Taurus. Besides the well-known Crab Nebula, this constellation contains S147, a large, old, complex, faint, and tough object, which at the time of Burnham's Celestial Handbook had never been detected visually. It has been since, and now by me: In my six-inch Intes Maksutov, I made a convincing detection of part of the web of filaments near epoch 2000 coordinates 0540 n26.9, and maybe a few other patches within a degree east and south-east. My observations were made at 27 and 47 diameters, using an Orion UltraBlock filter. I could hold the nebula about equally well at either power with the filter, but could not find any trace of it with the filter not in place. This one is a toughie, folks. I would rate it worse than the Sculptor and Fornax Dwarf Galaxies, at least, with this instrument. You never know what

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ous shadows) wasn't helping. Frustrated, I wandered over to the observatory for the 30" and spent some time helping with an unsuccessful search for the Cartwheel galaxy.

A few sensible souls moved to a site farther down the hill, which turned out to be much better sheltered from the wind and the white light. Eventually the rest of us joined them, resulting in quite a collection of equipment set up there, including a JMI 18" (envious sigh ... what a beautiful piece of hardware!)

For some reason, although the wind continued to make galaxies difficult, the seeing was excellent for nebulae. I stumbled across the "tank tracks" (NGC 2024) northeast of zeta Orionis while sweeping aimlessly through Orion. Oddly, I found this nebula (both the bright portion and the dark lane) much easier to see without the UHC filter than with it. Isn't this an emission nebula -- shouldn't the UHC help it? I looked briefly for the Horsehead, but didn't try very hard, since my setup wasn't steady enough in the gusty wind to use high magnifications.

Someone commented on the surprising amount of nebulosity showing in the Pleiades. I had never been convinced that I had been able to see the Pleiades nebulosity (rather than dewing or reflections or some other explanation for halos around the stars), but this time, the Merope nebula was large, obvious, and clearly asymmetrical. I'm a believer now.

After viewing the Rosette nebula (NGC 2237-9 + 2244) in Monoceros through other people's instruments, I had to try it myself. In the 6" Cave, it was easily visible (even more so with the UHC filter), but too large to see much of it at once. Wanting to see more, I unpacked the 4.25" f/4 Coulter Newtonian, popped in a 25mm Plossl with UHC filter, and there was the whole Rosette, bright as day, a better view than I'd seen in any of the larger telescopes. I knew small RFT's were good for something.

"Thor's helmet", discussed recently on sci.astro.amateur, was faint and unimpressive in the 6", but was

much improved by the UHC filter.

Meanwhile, a nearby observer discovered an interesting phenomenon. While viewing a nice open cluster with a bright foreground star (2362 and tau CMa?) through a 14", he commented that when the wind jiggled the telescope, the foreground star appeared to move in a different direction from the cluster stars. This announcement, predictably, was greeted with jeers -- until the jeerers looked themselves, and discovered that everyone could see the effect. Most interesting! Presumably the effect has something to do with persistence of vision causing the perceived image of the bright star to remain in place longer than the perceived images of the much fainter cluster stars.

Alas, the clouds which had been lurking threateningly on the horizon for hours finally converged on the Peak, and it was time to head home. [I believe this was Dec 7. Ed.]

### Eye on Everything

Lew Kurtz

This is probably my last issue as editor of the Ephemeris. The time requirements of a new job and night classes preclude my continuing as editor. It has been fun. I've learned a great things and worked with a lot of great people over the last 16 months putting this thing together. Thank you to all who helped with articles, suggestions, and encouragement. Some of the names that come to mind (in no particular order) are Bob Madden, Mark Wagner, Rich Neuschaefer, Bob Brauer, Jim Van Nuland, Bob Keller, Paul Barton, Rich Stanton, Don Macholz, Doug Ferrell and Jay Freeman.

Clear Skies!

#### Periodical Publication Statement

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San Jose Astronomical Association

### Do We Really Need More Prisons? (or, Welcome to Fremont Peak: "Light Pollution City?")

By Robert S. Hoyle

Well, do we need more prisons? I'm not sure, but I'll bet that most astronomy-types at least think about this when they see the light pollution coming from the ones at Soledad, and its effect on Fremont Peak. A single prison has been there for several years, but its light pollution was fairly moderate. Now, however, a completely new prison with extremely bright lighting has been added. This and the apparent upgrading of the old prison's lighting make the light pollution from this combined facility overwhelming.

I first noticed this one night last April when I was setting-up to do astrophotography at Fremont Peak, some 22 miles north of the prisons. I looked to the south that night and thought, "What's San Jose doing down there?". The intensely bright sky glow from the prison complex was clearly visible even 22 miles away. Photographically the true impact could be seen piercing up into the dark sky a full 35 degrees. Alas, the only remaining part of the sky that was truly dark at Fremont Peak had been dealt a crippling blow. Now, large aperture scopes looking for faint objects to the south may be operating at an "effective aperture" as low as 23 to 39% of their capacity; and any film photography seeking faint detail will likely be "sky-fogged." I was stunned.

Sure, I was aware of light pollution at the Peak and how it has been getting progressively worse in the last 10 years or so. But before the Soledad problem, the southern horizon at Fremont Peak -- with its glorious collection of Milky Way objects -- was still remarkably dark, especially when the fog came in covering the valleys. Setting up in this darkness, out in front of the Observatory on the hill overlooking the valley viewing south, and watching the Milky Way rise over the fog, was just a little awesome -- something beyond words, perhaps. Yes, I was stunned to have lost this -- along with the best

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more aperture is going to do, though.

While I had the filter handy, I swung the telescope over to the belt of Orion and looked for the Horsehead. This time I was able to see it with the UltraBlock, at 47x, about as well as without it. The last time I tried, I could not see it with the filter in place, but could without -- a quite anomalous result. And a quick look at the Pleiades at the same magnification showed lots of wispy nebulosity, of course without the filter, since these are reflection nebulae.

IC 2177 lies in southeastern Monoceros. At 47x, I found this huge mass of nebulosity fairly easy -- there were two large globs of glow, showing clear shape about the way many atlases plot them. I was not tempted to put in the filter, though it might have shown more.

The Rosette nebula and its associated cluster, NGC 2237 and 2244, and maybe some other numbers, are always fun. I am sure I can see the cluster naked-eye, but have never been so certain of the nebulosity. In any case, the big wreath of glow was easy to trace in the six-inch at 47x, though rather better seen in a smaller instrument at wider field; my Baby Brandon 63 mm refractor took in the whole thing at 22x.

Since the holidays were approaching, I looked at the Christmas Tree Cluster, NGC 2264, again at 47x, and was surprised to find the Cone Nebula readily apparent without any particular effort to look for it, almost like a wedge of darkness protruding "up" from the "top" of the tree. The effect was rather like two contrasting textures of black paint, as if the nebula was gloss black and the nebulous background nearby had a satin finish.

I mentioned that there had been discussion of NGC 2359, "Thor's Helmet", in this newsgroup [I pulled this from sci.astro.amateur - Ed.] , and someone with an 18-inch and digital circles dialed it up. This object is indeed spectacular; the view at 128x unfiltered was very nice, with lots of detail showing. The owner of the telescope

put in 171x with a filter -- I think it was Lumicon UHC, and claimed the view was a lot better, but I personally did not notice more than a little improvement. One other observer found it in a six-inch Dobson at 48x, also with a filter, and the view was similar, but of course smaller. I had put the Intes to bed by then, so did not try it in my own telescope.

(By the way, it is nice to see a small Dobson with high-quality optics. The six-inch I just mentioned is really very fine. Something about the Cave Astrola optical tube assembly, no doubt...)

Another observer had a three-inch Takahashi fluorite on a Tele Vue Gibraltar mount. The Tak fluorite was very nice -- we looked at M31 and M32 at 19x, 25x, and 38x, and could see star cloud NGC 206 and at least one dust lane in the main galaxy. Not bad for a three inch -- almost as good as a four... which is saying quite a lot, for an observation that depends more on raw photon count than on phenomenal wavefront accuracy. The Gibraltar mount was pretty much junk, however -- albeit handsomely finished junk. At less than 50x, motions started and stopped with noticeable jerks. Brass-on-steel bearings may have been all the rage in the heyday of great refractors, but they were old hat when the Model T Ford was new, and have been made completely obsolete for telescope use by the advent of teflon. Tele Vue sells this turkey for fine telescopes like the Genesis, that can in principle be used at several hundred diameters magnification, but this four-hundred-dollar mount isn't nearly up to it. The Gibraltar is as bad as the wretched and unloved bent-fork Tasco altaz, and nowhere near as good as the typical beginning telescope maker's first-effort Dobson, which will probably track at two or three hundred diameters with no problem at all. Tele Vue should either fix the Gibraltar or rename it the San Andreas...

On the way home from the Peak, I stopped for a meal at the Lyons restaurant in Gilroy. Sometimes I think I observe too much. They know me there -- I'm a regular.

views of some of the most beautiful objects in the heavens -- like M8, M16, M17, M20, M24, Omega Centauri, M83, NGC253, Centaurus A, the Helix Nebula, etc.

But that's not all. As we lose the skies at Fremont Peak, we effectively forfeit the wonderful facilities and conveniences there, too. What a shame. Still, this is how it seems to go with light pollution and astronomers. We think "you can't stop progress; sky glow is just the price we pay for living in a civilized world." When the inevitable growth comes, with all its attendant lighting, we pack up and move all of our equipment, and our hopes, farther and farther away to get to dark skies. We just give up all the wonderful things about a place like Fremont Peak. But we've got to start drawing a line here, somewhere -- we're backing ourselves into a corner! We can't just keep sticking our collective heads in the stars (sand?). Truly dark-sky sites that have any degree of accessibility and convenience, are becoming almost impossible to find today. Think what it's going to be like in another 10 years if light pollution continues to grow as it has in the past.

It doesn't have to be this way, though. The International Dark-Sky Association (IDA), a nonprofit corporation with a broad range of membership in different fields from 63 countries, is doing everything it can to help diminish excessive sky lighting. They take a common-sense, cooperative approach in working with the people at light pollution sources to illustrate how required lighting can be maintained while saving money. By using levels of lighting brightness that truly fit the situation, and fixtures that direct the light downward to the ground, not up, everyone wins.

Maybe we should look at the Soledad Prison light pollution problem using the IDA approach. For starters some questions might be: Just how much outdoor night lighting do they need at a prison and how bright should it be? (Aren't the prisoners locked up inside all night anyway?). If prison offi-

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cials are mostly concerned about escape attempts, couldn't they use motion sensors to flood the area with lights if someone is detected -- not just run them all night at full wattage? There are many other questions. Can you think of a few? Now may be the time to raise these issues as publicity is being focused on the current Federal and State investigations of the DOC (Department of Corrections). Amongst other things, these investigations seek to determine if "staged" inmate violence has been used to justify excessive demands for facility budgets. In all likelihood the DOC people are just well-intentioned public servants trying to do a difficult job. But maybe they have been so awash in money that they really didn't think about energy-efficient lighting.

These kinds of problems for astronomers are not going to go away on their own; there will be other light pollution issues for us in the future and maybe more "Soledad's" -- you can bet on it (the DOC wants to build five new prisons in the coming year; 15 in the next five years). Sometimes these things creep up on us slowly like ice freezing on a pond; before you know it, the sky is awash in thousands of overly-bright, unshielded street lights. In other instances they hit us like a car wreck: "that'll never happen to me" -- then WHAM! -- a Soledad Prison. Or maybe a "Garlic World." Garlic World U.S.A., to be built in Gilroy just north of Fremont Peak, is a \$500 million, 200 acre theme park (twice the size of Disneyland) modeled after the hugely popular Branson, Mo. country music facility, and will include dining, shopping, and 12 live music theaters.

Don't let us be frozen out of the night sky; don't be WHAMMED! You'd never think of just sitting back and letting your children be deprived of experiencing the beauty and wonders of Nature -- things like butterflies, birds, forests, and the oceans. But that is exactly what is happening to them with light pollution. They are being systematically excluded from the wonderful experiences of a truly dark sky, where their spirits and imaginations can soar

amongst the stars of the Milky Way.

So it's obvious then: like air and water pollution, light pollution is an "environmental issue" -- only, as the IDA says, "it won't rot your lungs, it only erodes your soul." The IDA also makes some other eloquent points: "Our place in the universe is defined by the light from these stars and galaxies; they give us a sense of whom and what we are. And to reach us with these lessons, this light often travels for hundreds, thousands and even billions of years -- what a shame to lose it to light pollution on the last moments of its long journey." And from the IDA, quoting Margaret Mead the famous anthropologist: "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

What you can do:

1. Let your officers know that you support their involvement in addressing this Soledad Prison lighting problem and in working with other astronomy organizations to define a unified, coordinated effort in talks with State and prison officials.
2. Ask your officers to join the IDA; you join the IDA. Amazingly, there are only about 1800 members worldwide -- that's less than 2% of the amateur and professional astronomers out there! The IDA really needs our support. Individual membership is \$20/yr.; an organizational, \$100/yr: The IDA, 3545 N. Stewart Ave., Tucson, Arizona 85716 (WWW: <http://www.darksky.org>).
3. If you have resources that might help in resolving the Soledad problem let your officers know, e.g., contacts or information concerning government officials, lighting engineers, and people in other organizations favorable to our cause.
4. Be on the alert for future light pollution problems. The best time to solve a light pollution problem is before it becomes one. Let your officers know.
5. Become an advocate for dark skies. A great opportunity exists in the upcoming comet Hale-Bopp event. Get people to go to a dark sky location to view this comet. Many people were unimpressed with the magnificence of Hyakutake because they only saw it

from the cities. Hale-Bopp is another great chance to "show off" dark skies.

In closing, I'll comment that we amateur astronomers often use the expression "Clear Skies" to sign-off. But if they're not dark, clear doesn't really do much good. Let's make it "Clear and Dark Skies" -- to you all.

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**MAKE MONEY FAST!** You've seen the spam in most internet newsgroups. Well, I'm not going to tell you how to make \$\$\$ with your telescope -- but I can tell you how to get paid in other ways.

Have you brought your scope to Houge Park, or had your neighbors look through it? Then you know how appreciative they are of the chance to look through it, and to learn a bit about what's up there.

Our club has the most active school star party program on earth -- here's your chance to team up with the people who have made it happen. We are not paid in dollars; we're not even repaid for our gas money. But we are paid many times over in OOOHHHs and AAAHHHs -- strong currency, I assure you! Sometimes there's hot chocolate and cookies, too.

You need not be an expert. You need a telescope, and enough experience to point it at something that is appropriate for the instrument in a city sky. Just a little knowledge about the object, and a stepladder so the smaller customers can reach the eyepiece, and you're doing it!

Most school events are weekdays from about 7 to 9 pm, so you are home in time for the late news. Jim's driving directions are detailed, so you don't need to have a cab-driver's skills, though a map is helpful. We usually have 2 to 3 week's lead time. Grade- and Middle schools, and sometimes high school, many on the east side (where their PTA is a strong one), and some more central, too. Many to choose from!

So contact Jim at (408) 371-1307 (11 am to 9 pm), or by e-mail at [Jim.Van.Nuland@sjpc.org](mailto:Jim.Van.Nuland@sjpc.org) to get started.

We have only a few events during January and February, but March will be a busy month! Already 6 on the calendar. Clear Skies!

# 1997 SJAA Calendar

# Directions to SJAA places

|           | General Meeting | Houge Park Star Party | Astro Class | Dark-sky Star Parties | Grant Ranch Star Parties |
|-----------|-----------------|-----------------------|-------------|-----------------------|--------------------------|
| January   | 25              | 3,17,31               | 18          | 4c, 11                | 4                        |
| February  | 22              | 14,28                 | 15          | 1, 8c                 | 1                        |
| March     | 22              | 14,28                 | 15          | 1, 8c, 29m            | 1                        |
| April     | 19*             | 11=                   | 26          | 5c                    | 5                        |
| May       | 17              | 2,16,30               | 31-         | 3c, 10m,31            | 3                        |
| June      | 21              | 13,27                 | 14          | 7c, 28e               | 7                        |
| July      | 19              | 11,25                 | 12          | 5c                    | 5                        |
| August    | 16              | 8,22                  | 9           | 2c, 30c               | 2 & 30                   |
| September | 13              | 12,26                 | 20          | 27c                   | 27                       |
| October   | 11              | 10,24                 | 18+         | 4, 25c                | 25                       |
| November  | 8               | 7,21                  | -           | 1, 22, 29c            | 22 or 29                 |
| December  | 13              | 5,26                  | -           | 20e, 27c              | 27                       |

\* Auction

= Astronomy Day substitute for Apr.12

- Class on 31st, maybe at Fremont Peak -- prime star party

+ Class on 18th or Star party on 25th

c Henry Coe and Fremont Peak. Others Fremont Peak.

e Early moonrise, > 4 hours of darkness but < 6 hours

m Late moonset

## OTHER dates and events --

Partial lunar eclipse Mar.23, max 8:41 pm

Easter - Mar.30 (school vacations week before or (usually) after

Day Light Savings Time start Apr.6

Astronomy Day - Apr.12, 1Q-2 days

TSP -- May 2 - 10, new moon on 6th

RTMC -- May 23 - 26, full moon on 22nd

Day Light Savings Time end Oct.26

GENERAL MEETINGS on 4th Saturdays Jan-Mar; 3rd Saturdays Apr-Aug, then 2nd Saturdays running into 1998. Auction on April 19.

ASTRONOMY DAY is on April 12

ASTRONOMY CLASS on 3, 4, 5th Saturdays, then shift to 2nd starting in June. May's is late, to stay out of RTMC.

STAR PARTIES -- "Early moonrise" nights have > 4 hours of dark, but < 6. Late moonset: small moon in evening. Both footnoted. COE: we go there only by prior arrangement, so they must be good nights, not marginal ones. Coe dates are also official Peak dates.

HOUGE PUBLIC star parties -- We should put out publicity only for 3 months at a time, instead of for the full year. If participation falls off, we can cut back.

Houge 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.

Henry Coe State Park is east of Morgan Hill.

From Hwy.101, exit onto East Dunne Avenue. Continue for 12 miles, far past Andersen Reservoir, to the park, atop the ridge.

Fremont Peak State Park is south of the village of San Juan Bautista.

From Hwy.101, about 11 miles south of Gilroy, take the eastbound Hwy.156 exit. Run for 3.0 miles, to a traffic light, and turn right onto county Hwy.G-1. Follow G-1 for 12 miles into the park. The park charges a \$3 entrance fee.

Grant Ranch County Park is located on Mt.Hamilton Road, which is also Hwy.130, leading to Lick Observatory. From Alum Rock Ave. in San Jose, pick up Mt.Hamilton Rd. and go 7.7 miles to the park, on the right. Allow a half hour from the freeway. (ok, this is not really an 'SJAA place', it is where Halls Valley Astronomical Group has their star parties.)



## COMET COMMENTS

Don Machholz

## Celestial Calendar - Feb 1997

Richard Stanton

**Comet Hale-Bopp** continues to brighten in the morning sky. It is an easy naked-eye object for early risers. You might want to start planning now on holding public star parties to show Comet Hale-Bopp. In February and early March the comet is visible in the morning eastern sky. Go ahead, schedule a morning star party! As March progresses the comet is better visible in the evening western sky. On the evening of Sunday March 23 a partial lunar occurs for the US, and Saturday April 12 is Astronomy Day. These nights, and those in-between, are good ones on which to show the comet. Then from after Full Moon (April 22) until the comet moves too far south to be easily visible (the first week of May) you'll have your last opportunities to show Comet Hale-Bopp.

## Ephemerides – Epoch 2000, 0h UTC

## C/1995 O1 (Hale-Bopp)

| Date       | R.A.     | Dec     | EL    | SkyMag |
|------------|----------|---------|-------|--------|
| 00 UT 2000 |          |         |       |        |
| 01-27      | 19h29.0m | +13°13' | 36° M | 1.7    |
| 02-01      | 19h40.5m | +15°29' | 38° M | 1.4    |
| 02-06      | 19h53.4m | +18°01' | 40° M | 1.1    |
| 02-11      | 20h07.8m | +20°50' | 41° M | 0.7    |
| 02-16      | 20h24.8m | +24°05' | 43° M | 0.5    |
| 02-21      | 20h44.1m | +27°31' | 44° M | 0.0    |
| 02-26      | 21h06.9m | +31°10' | 45° M | -0.1   |
| 03-03      | 21h34.1m | +34°57' | 46° M | -0.4   |
| 03-08      | 22h06.8m | +38°40' | 46° M | -0.6   |

## 46P/Wirtanen

| Date       | R.A.     | Dec     | EL    | SkyMag |
|------------|----------|---------|-------|--------|
| 00 UT 2000 |          |         |       |        |
| 01-27      | 23h49.7m | -08°33' | 48° E | 11.4   |
| 02-01      | 00h03.9m | -06°26' | 47° E | 11.2   |
| 02-06      | 00h18.7m | -04°13' | 46° E | 11.1   |
| 02-11      | 00h34.0m | -01°54' | 45° E | 10.9   |
| 02-16      | 00h49.8m | +00°29' | 44° E | 10.7   |
| 02-21      | 01h06.2m | +02°56' | 44° E | 10.6   |
| 02-26      | 01h23.2m | +05°27' | 44° E | 10.5   |
| 03-03      | 01h40.9m | +07°59' | 44° E | 10.4   |
| 03-08      | 01h59.2m | +10°32' | 44° E | 10.4   |

## 81P/Wild 2

| Date       | R.A.     | Dec     | EL     | Sky  | Mag |
|------------|----------|---------|--------|------|-----|
| 00 UT 2000 |          |         |        |      |     |
| 01-27      | 08h02.3m | +18°54' | 172° E | 10.8 |     |
| 02-01      | 07h58.2m | +19°22' | 166° E | 10.6 |     |
| 02-06      | 07h54.3m | +19°49' | 159° E | 10.5 |     |
| 02-11      | 07h51.1m | +20°16' | 154° E | 10.4 |     |
| 02-16      | 07h48.5m | +20°40' | 148° E | 10.4 |     |
| 02-21      | 07h47.0m | +21°02' | 142° E | 10.3 |     |
| 02-26      | 07h46.5m | +21°21' | 137° E | 10.2 |     |
| 03-03      | 07h47.1m | +21°37' | 132° E | 10.2 |     |
| 03-08      | 07h49.0m | +21°49' | 128° E | 10.2 |     |

## Orbital Elements – Equinox 2000.0

| Object               | Hale-Bopp        | P/Wirtanen       | P/Wild 2         |
|----------------------|------------------|------------------|------------------|
| Peri. Date           | 1997 04 01.13453 | 1997 03 14.14299 | 1997 05 06.62789 |
| Peri. Dist (AU)      | 0.9141030        | 1.0637469        | 1.5826156        |
| Arg/Peri (2000)      | 130.59083°       | 356.34322°       | 041.77000°       |
| Asc. Node (2000)     | 282.47069°       | 082.20387°       | 136.15458°       |
| Incl (2000)          | 089.42936°       | 011.72255°       | 003.24276°       |
| Eccen                | 0.9950969        | 0.6567490        | 0.5402220        |
| Orbital Period (yrs) | ~4700 years      | 5.46 years       | 6.39 years       |
| Reference            | MPC 28052        | MPC 27080        | MPC 28272        |
| Epoch                | 1997 03 13       | 1997 03 13       | 1997 04 22       |
| Absol. Mag/"n"       | -2.0/4.0         | 9.0/6.0          | 7.0/6.0          |

| Lunar Phase (pst) | time  | date | rise  | trans | set   |
|-------------------|-------|------|-------|-------|-------|
| NM                | 07:07 | 07   | 06:55 | 12:30 | 18:12 |
| FQ                | 00:58 | 14   | 11:37 | 18:44 | 00:56 |
| FM                | 02:27 | 22   | 18:27 | 00:14 | 06:05 |

|         |               |       |       |           |        |
|---------|---------------|-------|-------|-----------|--------|
| Mercury | Dist: 1.31 AU |       |       | Mag: -1.5 |        |
| date    | rise          | trans | set   | RA        | Dec    |
| 07      | 06:04         | 10:57 | 15:50 | 19:58.2   | -21:32 |
| 17      | 06:17         | 11:20 | 16:24 | 21:00.7   | -18:51 |
| 27      | 06:26         | 11:46 | 17:08 | 22:06.1   | -13:58 |

| Venus | Dist 1.67 AU |       |       |         | Mag -3.9 |  |
|-------|--------------|-------|-------|---------|----------|--|
| 07    | 06:29        | 11:29 | 16:30 | 20:31.1 | -19:41   |  |
| 17    | 06:30        | 11:41 | 16:53 | 21:22.1 | -16:32   |  |
| 27    | 06:26        | 11:50 | 17:16 | 22:11.2 | -12:35   |  |

| Mars     | Dist 0.76 AU |       |         | Mag -1.1 |  |
|----------|--------------|-------|---------|----------|--|
| 07 21:15 | 03:24        | 09:30 | 12:27.4 | +00:49   |  |
| 17 20:31 | 02:42        | 08:50 | 12:24.7 | +01:19   |  |
| 27 19:41 | 01:56        | 08:06 | 12:17.3 | +02:15   |  |

|          |               |       |         |           |  |
|----------|---------------|-------|---------|-----------|--|
| Jupiter  | Dist: 6.01 AU |       |         | Mag: -2.0 |  |
| 07 06:23 | 11:12         | 16:21 | 20:25.5 | -19:39    |  |
| 17 05:51 | 10:52         | 15:53 | 20:34.9 | -19:06    |  |
| 27 05:19 | 10:22         | 15:25 | 20:44.1 | -18:33    |  |

| Saturn   | Dist: 10.2 AU |       |         | Mag: +1.1 |  |
|----------|---------------|-------|---------|-----------|--|
| 07 09:13 | 15:15         | 21:17 | 00:19.2 | -00:22    |  |
| 17 08:36 | 14:39         | 20:42 | 00:23.0 | -00:04    |  |
| 27 07:59 | 14:04         | 20:09 | 00:27.1 | -00:32    |  |

| SOL Star Type G2V Intelligent Life in System ? |       |       |       |         |        |
|--|-------|-------|-------|---------|--------|
| 07   | 07:05 | 12:22 | 17:39 | 21:24.2 | -15:14 |
| 17   | 06:54 | 12:22 | 17:50 | 22:03.5 | -11:55 |
| 27   | 06:41 | 12:20 | 18:01 | 22:41.7 | -08:16 |

| Astronomical Twilight | Begin | End         |
|-----------------------|-------|-------------|
| JD 2,450,486          | 07    | 05:37 19:07 |
| JD 2,450,496          | 17    | 05:27 19:17 |
| JD 2,450,506          | 27    | 05:15 19:27 |

| Sidereal Time  | Transit Right | 07    | 00:00 | =     | 09:02 |
|----------------|---------------|-------|-------|-------|-------|
| Ascension at   | 17            | 00:00 | =     | 09:41 |       |
| Local Midnight | 27            | 00:00 | =     | 10:21 |       |

| Darkest Saturday Night: | 08-Feb |
|-------------------------|--------|
| Sunset                  | 17:41  |
| Twilight End            | 19:15  |
| Moon Set                | 19:25  |
| Dawn Begin              | 05:34  |



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Members are encouraged to submit articles for publication in the SJAA Ephemeris. Send articles to Lew Kurtz (via e-mail to lewkurtz@aol.com; fax - 720-9726; or a text file on a 3-1/2" diskette; or typed or hand written to 1336 Bobolink Circle, Sunnyvale, CA, 94087). Articles received by the 10th will be put in the following month's newsletter. Please include your name and phone number. I'll forward your articles to the next editor.

## Telescope Loaner Program Status

Paul Barton

| No. | Scope Description      | Borrower               | Due Date          |
|-----|------------------------|------------------------|-------------------|
| 1   | 4.5" Newt/P Mount      | <b>available</b>       |                   |
| 2   | 6" f9 Dob              | John Paul De Silva     | never returned    |
| 3   | 4" Quantum S/C         | Stephen Shoop          | 01/23/97 note 4   |
| 4   | 60mm refractor         | Del Johnson            | indefinite        |
| 5   | 60mm refractor         | <b>available</b>       |                   |
| 6   | 8" Celestron S/C       | Rudy Norvelle          | 03/11/97          |
| 7   | 12.5" Dobson           | Tim Sanstrom           | 02/09/97 note 4   |
| 8   | 14" Dobson             | <b>available</b>       | note 1            |
| 9   | C-11 Compustar         | Paul Barton            | note2             |
| 15  | 8" Dobson              | <b>available</b>       |                   |
| 16  | Solar Scope            | Jack Peterson          | indefinite note 3 |
| 18  | 8" Newt/P mount        | Ram Saxena             | 02/12/97 note 4   |
| 19  | 6" Newt/Polar mount    | Steve Wurzburg         | 12/03/96 note 4   |
| 21  | 10" Dobson             | Ravi Tembhekar         | 01/23/97 note 4   |
| 23  | 6" Newt/P mount        | Mike Bennett           | 01/06/97 note 4   |
| 24  | 60mm refractor         | Sridhar Lakshmikanthan | 01/25/97 note 4   |
| 26  | 11" Dobson             | Alex Crichton          | 03/01/97          |
| 27  | 13" Dobson             | Bob Bart               | 01/26/97 note 4   |
| 28  | 13" Dobson             | Doug Snyder            | 02/04/97 note 4   |
| 29  | C8 Super Polaris       | Robert Dannels         | 02/09/97 note 4   |
| 30  | 7" f/9 Newt/pipe mount | <b>available</b>       |                   |

### Notes:

1. Upgraded, easier to assemble
  2. Need a regular operator able to go to two or three SJAA star parties per month.
  3. Available for special occasions, call.
  4. Call In. Report how you are doing. Date extended.
- Waiting List:  
Gary Flint #19, 6" Newt/Polar mount  
All scopes are available to any SJAA member. Call Paul at 377-0148.

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Make checks payable to "SJAA"

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

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