

YR	MO	DAY	HR	JD(ET)	RA(J2000)	DEC	ORA	VAR	DOEC	DELTA	POSANG	THETA	BETA	GLONG	GLAT	AZ1	AL1	AZ2	AL2	TMAG
1996	3	20	0	2450162.5	14 53.28	+00 22.2	-5.87	-86.8	-20	1.15	270.8	196.4	36.8	221.0	15.5	229.8	43.7	72.6	23.6	1.2
1996	3	21	0	2450163.4	14 52.25	+00 04.1	-6.43	-100.3	-18	1.13	294.1	137.3	36.7	218.9	20.9	232.7	47.4	69.1	-18.0	1.2
1996	3	22	0	2450164.1	14 50.68	+12 0.3	-6.92	-142.5	-15	1.11	255.1	25.1	37.7	215.7	24.1	234.0	50.0	64.3	-0.0	1.2
1996	3	23	0	2450164.8	14 48.45	+14 3.2	-7.44	-19.5	-13	1.09	243.7	4.8	40.0	212.0	26.8	235.2	52.5	61.7	-20.0	1.2
1996	3	24	0	2450165.6	14 46.32	+16 3.1	-7.92	-21.5	-11	1.07	232.4	-4.9	42.9	209.0	29.4	236.3	54.9	46.0	-6.7	1.2
1996	3	25	0	2450166.3	14 44.17	+18 0.0	-8.44	-4.3	-10	1.05	221.9	-17.4	45.6	205.2	32.0	237.4	57.3	38.1	-12.2	1.2
1996	3	26	0	2450167.0	14 41.07	+19 15.1	-8.98	2.8	-9	1.03	210.7	-103.7	47.7	201.1	34.6	238.5	59.7	3.5	-18.8	1.2
1996	3	27	0	2450167.7	14 38.01	+20 11.9	-9.51	10.1	-8	1.01	199.9	-164.0	49.4	196.9	36.9	239.6	62.0	-37.4	-1.1	1.2
1996	3	28	0	2450170.5	14 04.77	+18 42.0	-10.06	-413.4	-14	0.98	65.1	80.4	51.8	80.2	58.2	4.0	24.4	348.0	41.4	1.1
1996	3	29	0	2450171.4	13 59.20	+16 54.7	-10.56	-324.0	-16	0.96	47.8	72.7	53.3	71.7	48.8	4.8	17.0	305.3	42.2	1.1
1996	3	30	0	2450172.1	13 53.21	+15 27.5	-11.07	-244.3	-18	0.94	48.1	88.9	102.7	87.0	43.1	12.8	11.8	326.0	41.8	1.1
1996	3	31	0	2450173.1	13 46.70	+14 36.4	-11.58	-173.4	-21	0.92	45.8	82.4	105.8	84.0	38.8	18.8	7.7	320.5	40.4	1.1
1996	4	1	0	2450174.5	13 40.54	+14 53.4	-12.08	-112.5	-24	0.90	45.5	58.7	107.8	82.0	35.4	18.8	4.7	315.8	38.0	1.0
1996	4	2	0	2450175.5	13 34.85	+15 14.0	-12.57	-63.6	-27	0.88	45.5	55.7	109.3	80.5	32.7	20.9	2.5	312.4	37.4	1.0

## Eye on Everything by Lew Kurtz

Don't miss the Leonids this month! Right after the general meeting should be a great time to head down to Freemont peak, set up a lawn chair and take in the view. Bring plenty of warm clothes and food.

All articles except the Cassini mission status article were written by SJAA club members.

## Observing report: Fremont Peak, October 5, 1996 Mark Wagner

What a treat it was to do a public program with the Fremont Peak Observatory Association's 30" Challenger telescope. I was assisting Dean Linebarger and Rich Neuschaefer. We also had occasional help from Richard Navarrete and Alan Nelms.

The evening began with SJAA member Rod Norden donning his wizard hat/grey long hair wig and celestially decorated cape, and giving two excellent talks to the public in the meeting room of the observatory. Dean, Rich and I were already involved in locating some of the brighter objects for the overflow members of the public who could not fit inside the meeting room.

The day had been hot, and the evening was one of those memorable t-shirt nites, all night long. With sunset around 6:20 p.m., there was a good six hours of observing prior to moonrise. We began with Jupiter, and followed with M22, M57 (which we stayed on for about an hour, as the talk had ended and the crowd all wanted to see

## Activities Calendar

### November

- 1 Hogue park star party
- 2 Star party at Fremont Peak state park. Sun set 5:07 pm, 52% Moon rise 11:53 pm.
- 9 Star party at Henry Coe state park, also Hall's Valley Astronomical Group at Grant Ranch. Sun set 5:00 pm, 1% Moon rise 6:04 am.
- 15 Hogue park star party. Sun set 4:57 pm, 29% Moon set 9:41 pm.
- 16 General meeting, speaker Jay Freeman on Binoculars and Binocular Astronomy.

### December

- 7 Star parties at Henry Coe and Fremont Peak state parks, also Hall's Valley Astronomical Group at Grant Ranch. Sun set 4:49 pm, 8% Moon rise 4:48 am.
- 13 Hogue park star party. Sun set 4:51 pm, 16% Moon set 8:36 pm.
- 21 General meeting, Speaker TBA.

24 hour News and Information:

SJAA Hotline: 408-559-1221

Home page url

<http://www.rahul.net/resource/sjaa>

(see current and past Ephemeris issues on the home page!)



## SONIC: THE CCD's Imaging Challenge! Doug Snyder

For astronomer's worldwide that like a challenge or a viewing project to occupy a night, a year, or a lifetime, there are many paths to choose and many challenges abound for the industrious observer. There is the Messier Marathon, the Herschel 400, the Palomar Globulars to name just a very few. Such is the spark that leads one to do the planning, the research, and develop the anticipation of the coming hunt in order to achieve success over the challenge, or just have plain fun and learn a whole lot along the way.

I have been pondering such a challenge for the growing numbers of backyard astronomers, myself included, who now possess that great technological instrument called the CCD camera. I won't go into any of the hype and flames that is centered around the use of these devices, I will just present my proposed imaging challenge to anyone using one and welcome discussion on the merits or drawbacks of the challenge and suggestions. I believe it is an accomplishable challenge, considering the presence of many types of cameras and associated telescopes found worldwide. It certainly entails more than just hooking up a camera and taking an image - there is a certain amount of pre-event planning, research, methodology, and learning (in my case anyway!) associated with this imaging challenge, which I have coined the name of SONIC - I do hope you take a minute to peruse the concept and give it some thought.

In this challenge, there is NO one particular object to image. The ob-

continued on page 5, see **Freemont**

continued on page 2, see **SONIC**

jective is to image a representative natural celestial object from at least twenty categories of objects found in the sky during the period of ONE night, or over the course of twenty-four hours. Similar to conducting a Messier Marathon, there may be only certain portions of the year in which all the conditions can be met, but it will sure will be fun finding out what those portions are!

Just so us imager's aren't accused of imprisoning a greater share of photons by those dedicated Marathon'ers, NO Messier objects can be considered for imaging in this challenge. That only eliminates 110 out of the thousands of objects within reach of today's ccd cameras.

Record keeping and identification: It will be most beneficial to maintain an observing log of images so that later identification of objects can be made - who knows what types of awards might be made available!

Here is the present list of categories that make up the challenge:

1) A star that is within 5 parsecs (17 lightyears) of Earth and which has an apparent magnitude LESS THAN 6.5 (fainter than 6.5). (There are some sources available for finding nearby stars - I use the data found in The Observer's Handbook, 1996, published by the Royal Astronomical Society of Canada, but available widely)

2) The Moon - any sunlit portion thereof and at any sunlit phase. Alternative: any natural planetary satellite, using as large an image scale that is conveniently possible. Inclusion of parent planet is ok.

3) A Planet (not Earth!) Knowing the difficulties of some cameras in taking planet images, the image does not have to be "publish" perfect.

4) An Asteroid - Ideally, two images taken minutes or hours apart showing movement of the asteroid. Be sure to record the name / number.

5) A Comet - Any imagible comet at the time of the challenge.

6) A Double or Multiple Star - A star system that is designated by one of the several Double Star Catalogs (ADS, IDS, WDS, etc); separation of A

& B must not be greater than 12 arcsec (the closer, the better), but other associated stars may be at greater distances; there must be a visible separation between A & B on the image.

7) Variable Star - a star that has an associated variable star designation, such as from the General Catalog of Variable Stars, although any recognized variable star designation is ok. The star must be within 75% of its predicted epoch of maximum (or, if it can be determined, minimum). Note that the requirement is for a time period, not a magnitude. Actual maximum's may occur well before or after the predicted date of maximum. Again, there are several readily available sources for this information (i.e. Sky & Telescope, OHB 1996, Sky Catalog 2000.0 Vol 2, etc.)

8) Planetary Nebula - any designated planetary other than those possessing a Messier number.

9) Open Cluster - any designated OC other than those possessing a Messier number - objects designated as OC's can be found in NGC2000.0, OBH 1996, etc.

10) Globular Cluster - any designated GC other than (you know).

11) SN Remant (SuperNova Remant): There is only 1 Messier object that is a SNR (M1), so everything else in the sky that is classified as SNR is fair game.

12) Dark Nebula - Any of the type of object that carries the description of dark nebula, and which has an appropriate catalog designation, such as LDN, Be, SL, or a Barnard number, such as B92.

13) Emission Nebula - a subset of "Bright" Nebula (the other being Reflection Nebula) - A patch of nebulosity that is also known as HII regions and which are visible due to their own radiation.

14) Reflection Nebula - a subset of "Bright" Nebula; nebulous material which is visible due to exterior radiation (i.e., close star).

15) Face-On Spiral Galaxy - No Messier's allowed, but many to be found elsewhere. Spiral structure should be evident in the image.

16) Edge-On Spiral Galaxy - The closer the edge to our vantage

point, the better.

17) Elliptical Galaxy - Galaxy classification E0 to E4 - again, no Messiers.

18) Galaxy Association - Three or more galaxies within a galaxy group or cluster that will be identifiable on the image (only 3 need to be identified). No Messier galaxies can be included within the three.

19) Quasar - Any Quasi Stellar Object that has the designation prefix of either 3C or 4C; there are many QSO's cataloged, and there are other exotic objects with the designation 3C or 4C; A good source for these is Sky Catalog 2000.0, Vol 2., but OBH 1996 also contains some data.

20) Black Hole Candidates - Areas in which professional astronomers suspect a Black Hole to be lurking - if this area happens to reside within a Messier object, then it is acceptable to image that area. (One candidate is Cygnus X-1) Alternative: Extended Nebula Complexes (Em + Ref) - areas in which extensive Bright Nebula predominate- these could include areas like the Horsehead Nebula, Rho Ophiuchi, or Gamma Cygni. But shoot for the Black Hole.

21) Meteor Trail - You get this one in your frame, I'd call your night a big success. Satellite tracks don't count.

Well, I didn't say it would be easy, but look at the fun you'll have researching all the possible objects visible on a given night and what order they should be imaged, and fooling around with focus, and f ratios - just makes me want to giggle. I have my date (well, a series of dates close together) in which I'm going to try, and a long list of objects. Now for the weather to cooperate.

Remember: Go SONIC! Snyder's One Night Imaging Challenge Please excuse any typo's - it late and I should be out viewing (notice I didn't say imaging), but I just had to get this written down.

Comments and Suggestions (Constructive) Welcome! Either by posting or email. [snyder@ix.netcom.com](mailto:snyder@ix.netcom.com)

Clear Skies To All!

[Doug posted this to sci.astro.amateur in January. -Ed.]

## Observing Report

Bill Arnett

Planning for the Oct 12/13 observing weekend, I noticed that it would be possible, if the weather cooperated, to see all nine of the planets in our solar system in a single evening, an irresistible possibility to me as the author of <http://www.seds.org/billa/tnp/> "The Nine Planets". The weather did not cooperate on Saturday but as Sunday evening approached with the cloudless deep blue skies I was on my way with high hopes to one of my observing spots, Henry Coe State Park, just south of San Jose, CA.

The evening started well with a beautiful thin crescent Moon only 36 hours old. I was afraid I would miss it so I stopped half way up the hill just at sunset and searched with my binoculars using my laptop computer as a guide. After some searching I found it, the youngest Moon I have yet seen. By the time I got to the observing site about 10 minutes later, it was totally obvious to the naked eye. Sometimes you don't need all the fancy technology :-)

On this occasion, it was possible not only to see all nine planets but also to observe them "in order". So Pluto was first and, of course, by far the hardest. (Yes, I know that Neptune is slightly farther from the Sun right now, but Pluto was pretty near the western horizon so it had to be first.) After quickly aligning my trusty 12" LX200, I punched up Pluto on the keypad to see if I could match the star field to a printed chart I had printed showing Pluto's position for that day. As usual, I forgot to print the chart with left/right reversed so mental gymnastics were required. Nevertheless it was immediately obvious that the LX200 had hit the right field and that Pluto was not to be seen. But at this point the sky was not quite dark so a bit of patience was called for. And by 8pm it was rewarded! With averted vision (and firm knowledge of the right position) Pluto came into view about 20% of the time. Not very interesting visually :-)

but with Pluto in the bag, the rest of my marathon was all downhill.

After a few key presses and loud gear whining later, Neptune's tiny deep blue disk appeared in my eyepiece. My computer told me where to look for Triton but no luck this time.

On to Uranus, a featureless pale blue dot. But there are 4 moons to try for. With foreknowledge of their positions and averted vision I was able to see Titania and Oberon; Ariel and Umbriel were visible only with averted imagination (a powerful but suspect technique!).

When it is well placed, Saturn always steals the show. And justifiably so! Lots of moons, features on the disk, and the fabulous rings; what more can you ask for? This was not a good evening for Saturnian moons, though, I was able to see "only" 5: Titan, Rhea, Dione, Tethys and Hyperion.

Jupiter and the four Galilean moons were easy, of course. Observers farther west got to see an Io shadow and transit, but I was content in the knowledge that I had now observed 99.9% of the mass of the solar system (aside from the Sun, of course).

After a quick peek at Comet Hale-Bopp it was time for the long wait until dawn and the inner planets. Fortunately, there were a couple of astrophotographers nearby who had a lot of time to chat during exposures.

A couple of nasty bands of clouds tested our faith at this point for a couple of hours. Two of the photographers gave up and went home muttering about having to work or some such mundane irrelevancies. Those of us with less sense and more dedication were rewarded with perfectly clear skies until dawn.

Mars was up by 3am. But even later when it was high enough to be seen clearly, no detail was visible. Mars' time will come in the spring.

The third planet from the Sun is pretty obvious, even at night :-)

Comet Tabur was well up by this time, too. Its almost featureless with no nuclear condensation apparent; it looks like a giant elliptical galaxy. At least one degree of tail was visible, too.

Blindingly bright Venus rose about 4am and was visible until well after sunrise. Nothing much to see ex-

cept the gibbous phase.

By 6am with most of the stars lost in the dawn light, Mercury. The silly software in the LX200 usually won't slew to Mercury saying that it is "too close to the Sun" even though the Sun is well below the horizon. But no matter, it will slew manually. I actually caught a glimpse of Mercury through the trees on the horizon and was able to watch it rise. It put on an interesting show, actually. The refraction of the Earth's atmosphere broke Mercury's image into a constantly shifting and shimmering blob of bright color. The image was often spread out into a line up to ten times longer than it was wide with all the colors of the rainbow from deep red to dark purple clearly visible. Not very interesting astronomically but very pretty.

And last, but definitely not least, the Sun. All in all, I saw 9 planets, 12 moons, two comets and the Sun: 24 solar system objects (plus a few meteors) in one night.

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### Cassini Spacecraft Status

September 25, 1996

Public Information Office  
Jet Propulsion Office  
California Institute of Technology  
NASA  
Pasadena, CA, 91109  
phone 818-354-5011

Engineers and technicians have completed assembling the major components of the Saturn-bound Cassini spacecraft at NASA's Jet Propulsion Laboratory in Pasadena, Calif., to create the three-story-tall robotic space explorer.

Scheduled for launch a year from now from Cape Canaveral, Florida, Cassini is the largest and most sophisticated U.S. spacecraft ever built to explore a planet. In about two weeks, Cassini will be moved to JPL test facilities where the spacecraft will be subjected to acoustic, vibration, thermal and

continued on page 4, see *Cassini* 

## A Good Night at Fremont Peak

Jay Freeman

We had a quite good night at Fremont Peak (near San Juan Bautista, California) September 14-15, 1996. There was a lot of fog and wet air near sea level, and the brisk sea breeze of early evening threatened to bring it all up slope and shut us down, but instead, the wind died down, the fog stayed on top of the city lights where it belongs, and we had a quite pleasant dark night.

The evening's sights started early. As the sun sank through clear, post-frontal air toward the far western horizon, I noted how golden and little obscured its colors were. As the last rim of the solar disc was about to disappear, I saw its color tending toward yellow. "Look, look!" I cried, "I think we're going to get a green flash!" And we did, all the way past green into the blue, in fact. I called the color "indigo", though someone else claimed it was only "teal".

I went chasing obscure double stars with my Intes 6-inch f/10 Maksutov, and got dewed out an hour before I was ready to leave. I dug out my 10x70 Orion binocular and started looking casually at things. The North American and Pelican nebulae were easy, as were the eastern and western arcs of the Veil, and the long central triangular patch. Hm. Sculptor was pretty well risen, so I took a look at NGC 253 and 288, then dropped the field to the general location of the Sculptor Dwarf Galaxy, which I had previously seen with this instrument. I was able to log it only as "suspected", though.

I poured some coffee in anticipation of the long drive home, and while sipping it wandered over behind the ranger's house, where all the folks with big iron had set up. Someone had a nice 20x100 binocular with modern optics, and let me play with it. I looked at Sculptor once again, and found the view of the Sculptor Dwarf more convincing. I showed the area to several other people, and we all agreed that we saw a brightening of the field at the right place.

By now there was a good deal

of interest -- very few people have seen this galaxy -- so of course everybody wanted to try other telescopes. I was skeptical about the larger telescopes, the great size and lack of edges of the dwarf galaxy often makes it just about undetectable with a field of view much smaller than a couple of degrees, but it couldn't hurt to try. In a 14-inch Newtonian at 58x, with just about a degree of field of view, the Sculptor Dwarf was much more obvious than I had feared. One of us remarked that it looked like a bad case of vignetting, except when you moved the telescope, it stayed put on the sky. The bright patch was obvious on moving the telescope around. We also tried a Meade 12-inch SCT on an LX-200 mount, with a 35 mm Panoptic eyepiece. At the resulting magnification of 87x, the Sculptor Dwarf was again visible. All of these observations were made with no light-pollution filters -- they don't help much with galaxies. I was very pleased to be able to show this elusive object to other folks. "It's amazing how gullible people are," I remarked, "here we all agree we have something that isn't there at all."

Someone suggested chasing after the California Nebula. Once we had remembered where it was, it was easy in both the 20x100 and the 14-inch, both unfiltered and with an Orion UltraBlock, I think it was. The nebula spanned some three 58x fields in the 14-inch.

In the big binocular, the Pleiades were filled with rich nebulosity. The Merope nebula was easy with direct vision, and all the other bright stars in the cluster seemed wreathed with nebulosity. Except for the Merope nebula, all the glow we saw was symmetrical about one or another of the stars, so difficult to distinguish from radiation due to dew. Cynical fellow that I am, I thought to turn on a red light and look hard at the objectives, but no, they were dew-free.

The owner of the Meade 12-inch SCT wanted to look for detail in M31. At 87x, we saw two dust lanes on the side of the nucleus toward M110, and one on the side toward M32. We traced the galaxy out all the way to the

bright star cloud -- is it NGC 206 (my atlases are at home)? -- part way out one spiral arm, then beyond for another field or more.

Both with and without filters, we saw a lot of nebulosity associated with zeta Orionis and several neighboring stars, but by the time I finally left, the constellation was still too low to find the Horsehead. I expect someone got it later.

It was a fine night.

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Cassini, continued from page 3

other tests in preparation for its upcoming launch and spaceflight.

The sheer size and technical complexity of the spacecraft is drawing crowds of employees and guests to view Cassini through the glass walls of the clean room at JPL's spacecraft assembly facility.

"Employees who've worked on planning the mission are excited to finally see the fruits of their labors," said Cassini Program Manager Richard J. Spehalski. "With all the major components put together, Cassini now actually looks like a spacecraft that's going to another planet. People seeing it for the first time are saying 'Holy smokes!'"

Scheduled for launch on October 6, 1997, Cassini will be the best-instrumented probe ever sent from Earth to another planet. When it arrives at Saturn in 2004, Cassini will explore the Saturn system in detail over four years in orbit, and drop a parachuted probe called Huygens to study the atmosphere and surface of Saturn's biggest moon, Titan. Titan is thought to have an environment similar to Earth's before life began.

Cassini is a joint mission of the NASA, the European Space Agency and the Italian Space Agency. The mission represents the contributions of thousands of people at contractor companies, universities and government facilities across the United States and in 16 European nations. The Cassini program is managed by JPL for NASA's Office of Space Science. The Cassini home page is at <http://www.jpl.nasa.gov/cassini>.

"The Ring"), on to M33, M74, The Helix Nebula, NGC 246, The Crab Nebula, The Veil Nebula, M27, NGC 253, M77, NGC 7331 (and companions), Saturn, NGC 891, M13, M42 and, the real treat of the night, the Horsehead Nebula.

After much intensive "faint fuzzy" hunting over the past year with Alan Nelms, I found the experience of showing the public some of the bright and famous objects of the autumn and winter skies to be very relaxing and refreshing. Both Dean and Rich commented how enjoyable it was as well. And, I have to admit that it is nice to drive to the peak without packing a couple large scopes and related equipment into my truck.

Other SJAA members present (that I saw or know were at the Peak) were, Jack Zeiders, Jim Bartolini, Bill Arnett, Ray Gralak, and Jay Freeman. I'm sure I left some SJAA members out, and I apologize, and there were also many other telescopes that brought their owners.

If you are an SJAA member that likes working with the public, having a membership in the FPOA in addition to our club, has wonderful benefits. Fremont Peak is still a premier bay area observing site on 3rd quarter and new moon weekends, and within a reasonable drive from anywhere from the peninsula south. Supporting Fremont Peak helps assure that it remains a valuable and enjoyable resource for all astronomy enthusiasts. It is a regular haunt of many experienced observers from the SJAA (and other clubs), and a great place to introduce yourself to some friendly amateur astronomers who can help you improve your observing skills or learn about the "tools of the trade." The only word of warning I offer is that not every night is a t-shirt night, and one should always come prepared with plenty of warm clothing.

If you are interested in trying "the Peak"..... look for our next star party date in the calendar of events in this newsletter. And don't forget... red flashlights only please!

Clear skies.

## Outer Planet Tour

Bill Dellinges

On the night of June 17th, I observed all five "outer planets" beyond Mars. This was a first for me and not preplanned. My objective was to track down Pluto, the one planet I'd never seen. I had given the hunt for Pluto a couple of half-hearted tries in the past without success.

Using the Sky & Telescope finder chart on page 71 (April 96 issue), I drew the field stars on paper so I could flip it over and shine a light through the back to match the mirror reversed image in my C14.

I used the setting circles to get to the general area first. Fortunately, I recognized some field stars immediately - this was a big break; now I knew for sure Pluto (mag. 13.7) had to be one of the specks in this 0.70 degree field (using a Tele-View 55 mm eyepiece at 71x). I quickly identified a suspicious object between two stars (mag. 11 and 12) on the chart track just where Pluto should be. This had to be it. Indeed, I would confirm its movement over the next two nights. Finally after 40 years of stargazing, I had seen all nine planets; of course the one we're standing on was easy! It had always bugged me to answer "no" when asked if I'd seen all the planets in my telescope. I was amazed how faint Pluto was. The C14's advertised limiting magnitude is 15. Pluto at mag. 13.7 was BARELY visible! Sometimes it actually disappeared and I would have to use averted vision to pull it back into view. Several factors might explain this, but let's not digress here and move on.

Jupiter was blazing away in the southeast and I turned the orange canon on the king of planets. Quite a change from Pluto to this monster! Wonderful as always, three moons, the NEB sporting a very ragged south side (have you noticed?). The SEB is back now after a few years hiatus. The Red Spot was not evident.

Remember the old days when if the Red Spot was facing us, boy you saw it! You couldn't miss it, it was red and conspicuous. Not so these days, it faded some years ago and is difficult

to "spot" now, though the indentation it makes in the SEB helps to locate it.

Each year I enjoy the challenge of finding Uranus and Neptune with the help of the S/T charts. Uranus was easy as usual due to its generous mag. 5.7. Neptune was a bit more difficult at 7.9 but was found in a few minutes with aid from my 10x70 binocs - I'd hate to have to rely on an 8x50 finder to locate Neptune, the binocs really help to pull in those faint field stars. Large binocs gather more light, render a right-side up field, and allow you to use two eyes. These factors are a good thing when hunting elusive quarry! I usually keep them mounted on a tripod, where their efficiency is greatly increased. You would do well to heed this free advice. The planets' blue-green discs were discernible (3.7", 2.3"). I must try for their moons sometime (Astronomy August '96 p.72).

I retired but awoke at 4:00 am unable to sleep. It dawned on me (no pun intended) that Saturn should be up, so I went back out to the observatory and rolled the roof back. Aiming the scope at the sole remaining object in the morning sky, I beheld a glorious sight - Saturn and its stunning ring, now tilted open 6 degrees, enough for me to gasp in delight. It had been a year or more since I'd seen the rings this well due to their edge on appearance recently. I also noted four moons.

So, seeing five outer planets in one night, and especially bagging Pluto, made for an enjoyable and productive observing session, one of the best that I can recall in some time.



### Periodical Publication Statement

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San Jose Astronomical Association

**COMET COMMENTS, Oct 6, 1996**  
by Don Machholz

**Celestial Calendar - Nov 1996**  
Richard Stanton

Two naked-eye comets are visible in our skies this month. In the evening sky Comet Hale-Bopp is doing well after dimming a bit during early September. This was followed by a substantial increase in brightness and a different appearance later in the month. This should be no surprise, as comets are expected to do the unexpected. Its tail is several degrees long. Meanwhile, Comet Tabur will be visible in both the north-western sky in the evening and the north-eastern sky in the morning for several weeks. Periodic Comet Machholz 1, discovered ten years ago, will be difficult in the evening sky.

**Ephemerides**

C/1995 O1 (Hale-Bopp)						C/1996 Q1 (Tabur)					
DATE	R.A.	Dec	EL	SkyMag		R.A.	Dec	EL	SkyMag		
00 UT	2000					2000					
10-29	17h38.1m	-03°29'	51°	E	4.8	14h44.9m	+42°20'	57°	E	6.2	
11-03	17h41.0m	-03°09'	48°	E	4.8	15h06.2m	+38°03'	54°	E	6.4	
11-08	17h44.3m	-02°47'	44°	E	4.7	15h20.8m	+34°22'	52°	E	6.7	
11-13	17h48.0m	-02°26'	41°	E	4.6	15h31.3m	+31°11'	49°	E	7.0	
11-18	17h52.0m	-02°00'	38°	E	4.5	15h39.4m	+28°22'	48°	E	7.3	
11-23	17h56.4m	-01°31'	35°	E	4.4	15h45.8m	+25°52'	46°	M	7.6	
11-28	18h01.1m	-00°58'	33°	E	4.2	15h51.2m	+23°37'	45°	M	8.0	
12-03	18h06.2m	-00°22'	31°	E	4.1	15h55.9m	+21°36'	45°	M	8.3	
12-08	18h11.6m	-00°18'	29°	E	3.9	15h59.9m	+19°47'	45°	M	8.6	
12-13	18h17.3m	-01°03'	28°	E	3.7	16h03.5m	+18°09'	46°	M	8.9	

96P/Machholz 1					
10-26	14h49.6m	-03°23'	15°	E	9.3
10-28	15h03.0m	-04°18'	16°	E	10.0
10-30	15h15.1m	-05°12'	16°	E	10.7
11-01	15h26.2m	-06°03'	17°	E	11.2
11-03	15h36.4m	-06°52'	17°	E	11.7
11-05	15h45.9m	-07°37'	18°	E	12.2
11-07	15h54.7m	-08°20'	18°	E	12.6

**Orbital Elements**

Object	Hale-Bopp	Tabur	Machholz 1
Peri. Date	1997	1996	1996
	03 31.86770	11 03.50419	10 015.06962
Peri. Dist (AU)	0.9170703	0.84001480	0.1247178
Arg/Peri (2000)	130.40061°	057.37495°	014.58608°
Asc. Node (2000)	282.46983°	031.41231°	094.53200°
Incl (2000)	089.38442 °	073.36167°	60.07415°
Eccentricity	0.99674010	1.0	0.9586366
Orbital Period (yrs)	4700	long period	5.24
Source	MPC 26879 (7-96)	MPC 27882	MPC 22033

Lunar Phase	time (pst)	date	rise	trans	set
LQ	23:53	02	23:26	05:32	12:33
NM	20:16	10	06:08	11:37	17:06
FQ	17:10	17	12:32	18:09	23:55
FM	20:10	24	17:02	00:16	06:20

Mercury	Dist: 1.41 AU	Mag: -1.5
date rise	trans	set RA Dec
07 06:58	12:05	17:11 15:09.8 -18:07
17 07:40	12:30	17:19 16:07.5 -22:17
27 08:17	12:56	17:35 17:19.3 -25:16

Venus	Dist: 1.32 AU	Mag: -4.3
07 03:47	09:43	15:38 12:46.5 -03:07
17 04:08	09:49	15:29 13:27.8 -07:15
27 04:29	09:56	15:23 14:19.1 -12:02

Mars	Dist: 1.57 AU	Mag: +0.5
07 00:47	07:28	14:07 10:29.7 +11:17
17 00:34	07:08	13:42 10:47.9 +09:38
27 00:19	06:48	13:16 11:08.7 +07:42

Jupiter	Dist: 5.72 AU	Mag: -2.0
07 11:12	15:59	20:45 19:01.2 -22:58
17 10:40	15:27	20:14 19:08.2 -22:48
27 10:08	14:56	19:44 19:17.4 -22:32

Saturn	Dist: 8.87 AU	Mag: +0.8
07 15:08	21:05	03:07 00:08.5 -01:52
17 14:28	20:25	02:26 00:07.3 -01:58
27 13:48	19:45	01:45 00:06.5 -02:01

SOL Star Type G2V	Intelligent Life in System ?
07 06:39	11:51 17:03 14:54.9 -16:41
17 06:50	11:53 16:55 15:31.8 -19:05
27 07:00	11:56 16:51 16:18.0 -21:22

Astronomical Twilight	Begin	End
JD 2,450,394 07	05:10	18:32
JD 2,450,404 17	05:20	18:26
JD 2,450,414 27	05:29	18:22

Sidereal Time					
Transit Right	07	00:00	=	02:03	
Ascension at	17	00:00	=	03:38	
Local Midnight	27	00:00	=	03:22	

Darkest Saturday Night:	09-Nov
Sunset	17:04
Twilight End	18:37
Moon Set	16:26
Dawn Begin	05:40



## Astro Ads

**Celestron 5 Telescope:** Excellent Celestial Photography, special coatings, 12 & 25 mm oculars, tripod, wedge, case, Camera Adapter, Spotting Scope. Makes excellent 1300mm Camera lens, paid \$1400 in 1987, Asking \$850.  
Rick 408-377-3717

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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.

## Telescope Loaner Program Status

Paul Barton

No.	Scope Description	Borrower	Due Date
1	4.5" Newt/P Mount		available
3	4" Quantum S/C	Stephen Shoop	11/23/96
6	8" Celestron S/C	Glen Yamasaki	12/06/96
7	12.5" Dobson	Tim Sanstrom	11/09/96
8	14" Dobson		available
9	C-11 Compustar		see note
15	8" Dobson	Rudy Norvelle	11/24
16	Solar Scope	Jack Peterson	indefinite
18	8" Newt/P Mount	Ram Saxena	10/10/96
19	6" Newt/P Mount	Steve Wurzburg	11/03/96
21	10" Dobson	Ravi Tembhekar	11/23/96
23	6" Newt/P mount	Mike Bennett	12/06/96
24	60mm refractor	Sridhar Lakshmikanthan	11/25/96
26	11" Dobson		available
27	13" Dobson	Bob Bart	12/26/96
28	13" Dobson	Doug Snyder	12/04/96
29	SP-C8 Optical Tube	Bob Madden	indefinite

Note: Need a regular operator for club's C-11. This is a fine scope.

All scopes are available to any SJAA member. Call Paul at 377-0148.

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