

SJAA EPHemeris

VOLUME 6 NUMBER 12 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION December 1995

Eye on the Ephemerides by Lew Kurtz

You should have received the November issue of the Astronomical League's newsletter, REFLECTOR. SJAA joined the AL so we could buy affordable liability insurance (welcome to the 90s). Did you see that article about Comet Hale-Bopp and the total solar eclipse in 1997? Siberia in March, that has to be COLD!

At the November general meeting, Bob Garfinkle gave a great talk on both star hopping and some of the history of how the moon's features came to be named. A few people managed to get an autographed copy of Bob's book on star hopping.

This month's speaker at the general meeting is Dr. Christopher P. McKay, Space Science Division, NASA Ames Research Center. His talk will be "From Antarctica to Mars, the Search for Life".

Shiloh Unruh, historian at Lick Observatory, is completing a book -- this one a murder mystery. This seems to be a break from his usual astronomical topics, but only to a point. The victim was the daughter of Captain Floyd, the latter was James Lick's confidant and administrator of the Lick trust. Killed for her inheritance, the tale takes us to Bosnia, among other places; and numerous well-known astronomers appear in the story, including a fake astronomer. The mystery remained unsolved until this year -- come learn who had a part in the outcome! Shiloh will address SJAA on January 4, 1996. He is an outstanding speaker -- cancel your other engagements!

There are a few pictures in the Ephemeris from previous meetings: one from SJAA's birthday party in October

- Dec 2: No activity as there is too much moon.
- Dec 9: General Meeting 8:00 pm at Hough Park. Speaker is Dr. Christopher McKay on "From Antarctica to Mars, the Search for Life". Board meeting at 6:15 pm is open to all members.
- Dec 16: Star party at Henry Coe State Park, also Halls Valley Astronomy Group is at Grant Ranch. Sun sets 4:50pm, 30% Moon rises 2:10am.
- Dec 23: No host star party at Fremont Peak State Park. Sun sets 4:54pm, 7% Moon sets 7:17.
- Dec 29: Hough Park star party. Sun sets 4:59pm, 64% Moon sets 1:46am.
- Jan 5: General Meeting 8:00 pm at Hough Park. Speaker is TBD. Board meeting at 6:15 pm is open to all members.
- Jan 13: Star party at Henry Coe State Park, Sun sets 5:10pm, 44% Moon rises at 0:59am.
- Jan 20: Star party at Fremont Peak State Park, Sun sets 5:18pm, 1% Moon sets 6:01pm.
- Jan 26: Hough Park star party. Sun sets 5:25pm, 47% Moon sets 0:35am.
- Jan 27: Observational Astronomy Class at Hough Park. Open to all, just show up at 7:00pm

(complete with cake and apple juice), and two from the September Slide and Equipment Night. Lots of nice 'scopes.

The Observational Astronomy class starts next month at a new time, 7:00pm. Class is (as always) open to all, and meets at Hough Park.

Copyright © 1995
San Jose Astronomical Association, Inc.

Forty Years Ago this Month by Jim Van Nuland

(Here's the final installment of the "Forty Years Ago" series. It has been fun looking back to the first year and seeing the club's beginnings. The Sept. 9, 1955 roster lists 24 members plus 24 more on the mailing list. Today's roster shows 200 members plus 50 more on the mailing list that includes stores, schools, and 15 other clubs. - Jim)

The December 1955 meeting of the San Jose Amateur Astronomers was held at San Jose State College, and marked the one-year anniversary of the initial meeting.

The planet Mercury was discussed by Bob Cunningham. His coverage was very thorough and well organized.

Dean Pritchett presented the Constellation of the Month: Auriga. With the aid of a projector, he told us many interesting things about Auriga, and the members are anxious for the sky to clear so that we may have a look.

Next came the story of the Christmas Star, told by Don Anderson. Most of us are in accord with the idea of there having been some natural and actual phenomenon in the sky at the time of the birth of Jesus, but there is no agreement as to the exact nature of the event. Possibilities that were discussed were Venus, conjunction of Jupiter and Saturn in 7 BC, comets and/or meteors, and supernovae.

Walt Krumm gave the last talk of the evening, "An Introduction to Variable Stars". He explained the various types of variable stars, how they vary, and other pertinent points.

The meeting was adjourned at 10 pm. There were 16 present, including two first-time guests.

Live From the Stratosphere, The Last Flight of the Kuiper Airborne Observatory

by Mark Wagner

A group of SJAA members held a star party in conjunction with other amateur and professional astronomers October 13 at NASA/Ames in Mountain View.

The program was the culmination of many years of service by the now mothballed Kuiper Airborne Observatory (KAO), as the aircraft participated in the "Live From The Stratosphere" education program produced by NASA, public television and public schools across the country.

We were fortunate in learning of the program a few days prior to the event. A lucky phone call to an amateur astronomer in the Sacramento Valley Astronomy Association was all it took. Once in possession of the name, phone number and e-mail address of NASA's education officer, Mr. Tom Clausen, we were eagerly invited to participate in the evening's program.

Arriving about one hour before sundown, we found our observing site was in a very dramatic setting. We were in front of the hanger which berths the KAO. Across the tarmac was the huge hanger so familiar as "the landmark" object at Moffett Field. To our left was an active runway, with P3 Orion's and other aircraft landing frequently. To our right was the hanger where 140 middle and high school students were in contact with the KAO by television link-up. That hanger also housed an upgraded U2, pressurized flight suit, as well as other aircraft. Just outside the hanger were Harriers Jumpjets, F18s and other dream machines. What a sight!

As dusk approached, our SJAA group was all there. Rich Neuschaefer, Ed Erbeck, Dean Linebarger, Jim Bartolini, Doug Ferrell and myself. About half a dozen others were set up nearby. Scopes included a 4", 8" and 10" reflectors, 4", 5" 6" refractors, and sct's ranging from 8" to 14".

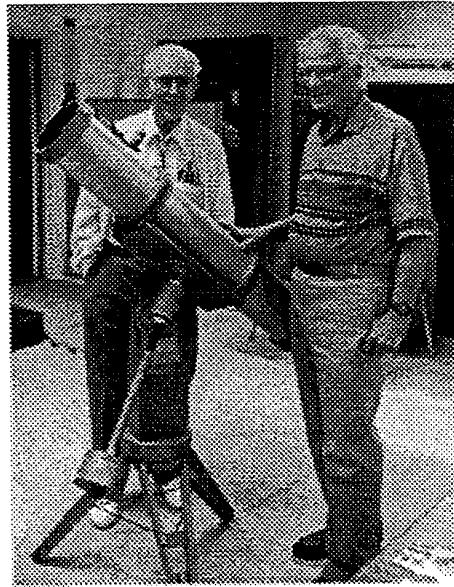
I was asked to go into the hanger and address the students during the program, instructing them on starparty etiquette. While I waited, it was interest-

ing to see the interaction between astronomer Wendy Whiting aboard the KAO and the children. Live discussion from 40,000 feet with kids in three geographically remote locations..... amazing. They were talking about images being beamed down of the Ring Nebula (M57) among other objects.

Soon after, the kids began coming out of the hanger to look through the telescopes. Organization and planning are the key to a successful event, and NASA did a wonderful job. After the kids were prepped, they were brought out on a schedule designed to accommodate two separate groups. The middle schools were first. The students were mostly well behaved and very interested. After about 45 minutes, they went in and out came the high schoolers. Many of the older kids asked thoughtful questions, expressed genuine interest in the telescopes and images, and were courteous and well behaved. Funny thing was that it was the kids, and not the teachers, who seemed to be more informed and interested observers! Imagine what a treat a dark sky would be for this group.

Once the star-party wound down, our group relaxed in our chairs and sat on the runway, talking about club activities, looking at the light dome of San Jose, and waiting for the arrival of the KAO. After perhaps an hour, NASA employees, their guests, and the amateur astronomers began moving toward the runway. One considerate person handed out foam earplugs, advising us that the KAO's engines are quite loud and piercing.

Standing just off the runway, all waited for an era in astronomy to draw to a close. The KAO has a long and productive history, and it was with a feeling of pride and sadness that we viewed the craft's lights on approach. It touched down within minutes, turned around at the end of the long runway after and taxied back to the turnoff toward us and



John Delaney (right) October's general meeting speaker, with Richard "Share it with" Barret after John's talk on the early days of SJAA. John and Richard are SJAA founding members.

its hanger.

It was an amazing sight to see it taxi by, its right wing-tip nearly overhead as it passed. Once it was parked, the crew began disembarking to applause and tears. What lucky people to have had such a unique experience in astronomy! After a short time, we boarded the KAO, and spent about 30 mintes walking through, looking at the "container" that housed the airborn telescope, and learning how it was gyroscopically stabilized during flight. SJAA member Edna DeVore, active for years in the KAO program talked with me about the history of the craft, adding much to my experience.

The evening was very pleasant. Although it cannot be considered a preferred observing site, I know I am not alone in the enjoyment I had supporting a program like Live From The Stratosphere. If another such NASA opportunity becomes available, other SJAA members who would like to be notified can contact me by phone at (408) 356-1072, e-mail (mgw@resource-intl.com), at a club meeting or at Fremont Peak.

A Very Successful School Star

Party

by Jim Van Nuland

How does an amateur astronomer from Amador county get teamed up with SJAA to do a school star party? It happened, though I still don't understand all of it.

My daughter, Barbara, took a phone message to check my e-mail.

I found a note from a Larry Brown, asking if SJAA could put together a star party on Oct. 24 at the Walden West science camp, located inside Sanborn Canyon county park. This was little more than a week away. Expect about 200 kids!

I put out the call, and by the next evening had 4 offers in hand. I then told Larry that we could do it and gave him all the details. He was rather amazed: 1) at the fast response from me and our members (I guess he doesn't have many of his club members using e-mail, or doesn't have as many great people who are ready to run at the drop of a note), 2) that I had detailed driving directions and that I knew just where we would set up (we had done a star party for girl scouts at Walden the week before), and 3) that I knew he lived near Volcano, something he hadn't mentioned (Barbara noticed that the number was in Volcano, CA, not far from Sutter Creek where she lives).

By the appointed day, we had 6 scopes: Bob Ashford, Jim Bartolini, Terry Kahl, Bob Madden, Jack Petersen, and myself. We chose objects and tuned up. Saturn, M31, M57, Albireo, M11, and M13, I think.

The camp is run by and for the Santa Clara county schools, and the kids are 5th and 6th graders. They are organized into groups of about 12, and the camp staff stays with them at all times. The camp was split in half, with half at the telescopes, while the others took a night hike. After about an hour, they changed places.

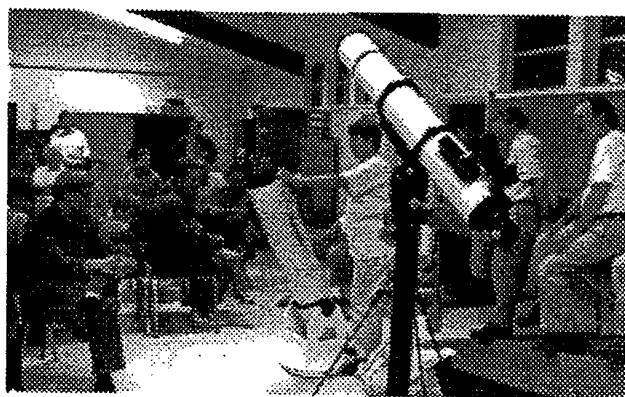
This may seem rather restrictive, but it worked out wonderfully, as we had a group at each scope, and never more than 12 in the line. So we could

continued on page 5, see Walden



Slide and Equipment Night, September 1995

Ernie Piini
showing his
folding
refractor



Terry Kahl
showing the
simplicity of
her 8"
dobsonian

Thanks

by Paul Barton

A note of appreciation to SJAA members and friends for the support they have shown to the Telescope Loaner Program - suggestions, technical help, parts donations, even labor. The loaner program has grown from 3 or 4 junkers to about 15 quite good scopes.

The latest scope (SJAA #25) is a Dobson, 11" f/4, and may even have a little computer readout. The Celestron 11" blank, originally f/2, is nearly finished - enough that it can be seen to be successful. It is figured - no turned edge - and polished, but more complete polishing is being done. It was done partly by hand and partly on a home brew grinding and polishing machine made by Bob Madden and myself. Similarly, the testers, Ronchi and Foucault, were made by Bob and myself, plus some help from the internet.

Various donations, too numerous to mention here, have gone into

stock or previous scopes.

For SJAA #25, Terry Kahl donated a fine focuser. Others are on hand and may grace a future scope. Harry McGuire donated a perfect diagonal. The finer has not been selected - several on hand. Crazy Ed donated a spider (he didn't know it, but wait 'till he tries to cash that check) - kidding aside, Ed has donated generously, teflon etc for Dobson bearings. Jim Bartolini donated a truly beautiful complete base assembly (ready for the SKY VECTOR).

The 11" mirror blank and the Lumicon SKY VECTOR came from Riverside Telescope Maker's Conference via Bob Madden. The 25mm eye piece is thanks to Jack Peterson. Jack Zeiders donated a number of fine eye pieces, which grace various scopes.

If someone's donation is not shown here, maybe our friendly editor lined it out for lack of space.

(never happen! -Ed)

Correction to appendix in "How to Make a Telescope", 2nd edition
by Dick Suiter

[Jean Texereau (pronounced Tex-er-oh by my french speaking friends. Barton says it is Ta-share-a) wrote a book, now in its third printing, titled "How to Make a Telescope". It is now published by Willmann-Bell, ISBN 0-943396-04-2. My version is the second English printing and does not have the BasicA code printed in it. But, the code is used in the Foucault measurement(s) reduction. This has been the standard telescope making book for years!]

I've been following this thread as I was interested in Dick Suiter's comments. I believe he is just trying to make corrections for those who have been having trouble with the reductions of measurements.

Will Remaklus is the son of W-B's owner Perry Remaklus and was at the last spring's RTMC.

Bob Madden
Bob pulled this article off the net and Dick has revised slightly from the original. Ed.]

Bruce Bowman asked if anyone had a version of the program in Texereau that had been debugged...

I wrote the Advanced Capabilities version of the Texereau program on p 337+ in the 3rd printing of the 2nd edition of Texereau. This allegedly is a debugged version of the original, which it immediately followed. My version was dented slightly in one respect. Lines 2370 and 2380 were placed two lines too low. If you are still using BASIC, renumber lines 2350 and 2360 to 2383 and 2386. If you are using QBASIC or higher, you shouldn't need numbers at all on these lines, because branching does not require them. Just move them below 2380 and erase the labels. The final order reads:

```
2370 Y = T(2, J)  
2380 X = A3 * Y * Y + C3  
2383 IF J = P1 - 1 THEN 2400  
2386 IF J = P2 - 1 THEN 2400
```

I apologize for the confusion. This error was my fault, not the publish-

ers! I inadvertently mailed a previous version to W-B. I think my bobble was cured in subsequent printings or at least was included in an erratum notice, because I reported it at once. Also, I saw another version posted with this change made and I doubt that the program would have been independently repaired in precisely this manner.

Incidentally, the original (Remaklus) version works fine for MOST wavefronts, but not all. The difficulty was that it didn't check all reference curves, but only those where the reference parabola would be on top of the wavefront. Sometimes, there was no solution with two high places poking upwards from the wavefront, and the program then got lost. Choosing a reference wavefront is easy to do by hand, but it is awfully hard to tell a computer how to do it. Will Remaklus made a game first try.

In the enhanced version I cured this problem by checking the maximum deviation of every parabola that touched two non-adjacent points and did not cross the wavefront. Some might argue with good reason that this is unnecessary refinement, since slight tester-reading changes will often modify the wavefront drastically.

My version also calculates Millies-Lacroix numbers for graphing purposes even though those data are implicit in the transverse aberration chart. Of course, if you have printings 1 or 2 (look at the copyright page), you have the original Will Remaklus version without my enhancements.

Also, please don't confuse my version as it appears in Texereau with my commercial program AdMir. AdMir is based on my TM#32 article and is much more sophisticated than the general-purpose programs in Texereau.

Periodical Publication Statement

The SJAA Ephemeris, newsletter of the San Jose Astronomical Association, is published monthly, 12 times a year, January through December.

San Jose Astronomical Association
5380 Pebbletree Way
San Jose, CA 95111-1846

ULYSSES Mission Status - 10/01/95
by Ron Baalke
(reprinted with permission)

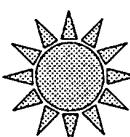
PUBLIC INFORMATION OFFICE
JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
PASADENA, CALIF. 91109
TELEPHONE (818) 354-5011

The Ulysses spacecraft completed its primary mission of exploring the poles of the Sun at 2 a.m. Pacific Daylight Time on September 29, when it left the high latitude region of the northern solar pole. Today the spacecraft is approximately 69 degrees north of the Sun's equator, traveling at a heliocentric velocity of about 84,500 kilometers per hour (52,500 miles per hour).

All operations and science experiments continue to go well in this first ever journey out of the ecliptic plane. NASA's tracking facilities near Madrid, Spain and at Goldstone, Calif. continue to monitor the spacecraft about 12 hours each day.

Ulysses will now begin to journey back out to the orbit of Jupiter, reaching the giant planet's distance of 5.4 astronomical units (about 800 million kilometers or 500 million miles) on April 17, 1998. Once there, the spacecraft will then head back on its high latitude trajectory toward the Sun, returning again to its vicinity in September 2000.

The mission -- a joint project of the European Space Agency and NASA -- has been funded for a second pass over the Sun's poles in 2000. When Ulysses returns, the Sun will be in its most active sunspot phase and the solar magnetic field will have reversed polarity. Scientists expect to learn much more about the forces at work in this complex star during the peak of its activity.



Embryonic Stars Emerge from Interstellar "EGGS"

Ron Baalke

(reprinted with permission)

Don Savage
Headquarters, Washington, DC

Fred Brown
Goddard Space Flight Center
Greenbelt, MD

Ray Villard
Space Telescope Science Institute
Baltimore, MD

Dramatic new pictures from NASA's Hubble Space Telescope show newborn stars emerging from dense, compact pockets of interstellar gas called evaporating gaseous globules (EGGs). Hubble found the "EGGs," appropriately enough, in the Eagle nebula, a nearby star-forming region 7,000 light-years away in the constellation Serpens.

"For a long time astronomers have speculated about what processes control the sizes of stars - about why stars are the sizes that they are," says Jeff Hester of Arizona State University, Tempe. "Now we seem to be watching at least one such process at work right in front of our eyes."

Pictures taken by Hester and co-investigators with Hubble's Wide Field and Planetary Camera-2 (WFPC2) resolve the EGGs at the tip of finger-like features protruding from monstrous columns of cold gas in the Eagle nebula (also called M16). The columns - dubbed "elephant trunks" - protrude from the wall of a vast cloud of molecular hydrogen, like stalagmites rising above the floor of a cavern. Inside the gaseous towers, which are light-years long, the interstellar gas is dense enough to collapse under its own weight, forming young stars that continue to grow as they accumulate more and more mass from their surroundings.

Hubble gives a clear look at what happens as a torrent of ultraviolet light from nearby young, hot stars heats the gas along the surface of the pillars, "boiling it away" into interstellar space - a process called "photoevaporation." The Hubble pictures show photoevaporating

gas as ghostly streamers flowing away from the columns. But not all of the gas boils off at the same rate. The EGGs, which are denser than their surroundings, are left behind after the gas around them is gone.

"It's a bit like a wind storm in the desert," said Hester. "As the wind blows away the lighter sand, heavier rocks buried in the sand are uncovered. But in M16, instead of rocks, the ultraviolet light is uncovering the denser egg-like globules of gas that surround stars that were forming inside the gigantic gas columns."

Some EGGs appear as nothing but tiny bumps on the surface of the columns. Others have been uncovered more completely, and now resemble "fingers" of gas protruding from the larger cloud. (The fingers are gas that has been protected from photoevaporation by the shadows of the EGGs). Some EGGs have pinched off completely from the larger column from which they emerged, and now look like teardrops in space.

By stringing together these pictures of EGGs caught at different stages of being uncovered, Hester and his colleagues from the Wide Field and Planetary Camera Investigation Definition Team are getting an unprecedented look at how stars and their surroundings appear before they are truly stars.

"This is the first time that we have actually seen the process of forming stars being uncovered by photoevaporation," Hester emphasized. "In some ways it seems more like archaeology than astronomy. The ultraviolet light from nearby stars does the digging for us, and we study what is unearthed."

"In a few cases we can see the stars in the EGGs directly in the WFPC2 images," says Hester. "As soon as the star in an EGG is exposed, the object looks something like an ice cream cone, with a newly uncovered star playing the role of the cherry on top."

Ultimately, photoevaporation inhibits the further growth of the embryonic stars by dispersing the cloud of gas they were "feeding" from. "We believe that the stars in M16 were continuing to grow as more and more gas fell onto

them, right up until the moment that they were cut off from that surrounding material by photoevaporation," said Hester.

This process is markedly different from the process that governs the sizes of stars forming in isolation. Some astronomers believe that, left to its own devices, a star will continue to grow until it nears the point where nuclear fusion begins in its interior. When this happens, the star begins to blow a strong "wind" that clears away the residual material. Hubble has imaged this process in detail in so-called Herbig-Haro objects.

Hester also speculated that photoevaporation might actually inhibit the formation of planets around such stars. "It is not at all clear from the new data that the stars in M16 have reached the point where they have formed the disks that go on to become solar systems," said Hester, "and if these disks haven't formed yet, they never will."

Hester plans to use Hubble's high resolution to probe other nearby star-forming regions to look for similar structures. "Discoveries about the nature of the M16 EGGs might lead astronomers to rethink some of their ideas about the environments of stars forming in other regions, such as the Orion Nebula," he predicted.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc., for NASA, under contract with the Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency.

Walden, continued from page 3
describe the objects, answer questions, and help the kids, just as if it was a tiny group. Then 10 minutes later, the group would move to another scope.

We ran about 200 kids & staff past the scopes in about 2 hours -- very efficient and never rushed anyone. And my scope never got pushed off its target, Saturn. Excellent at 245x.

Larry is working with Project Astro. Although he lives way up in Amador county, he asked to be teamed with one of the people at Waldon West. As I said, I still don't understand all of it.

COMET COMMENTS, 11-08-1995

by Don Machholz

Comet activity has picked up in the past few months. A couple of comets have outburst - one- Periodic Comet Schwassmann-Wachmann 3, remains in our southern evening sky. Not far away is periodic Comet Honda-Mrkos-Pajdusakova. Meanwhile, Comet Hale-Bopp slips behind the sun, in three months it will reappear in the morning sky. Reports of the comet dimming are not true, the comet was simply seen against a thicker Milky Way background.

EPHEMERIDES

122P/de Vico

DATE 00UT	R.A. 2000	Dec	EL Sky	Mag
11-19	16h08.5m	+25d53m	46d E	8.8
11-24	16h26.6m	+24d23m	45d E	9.2
11-29	16h42.3m	+23d02m	45d E	9.6
12-04	16h56.0m	+21d50m	44d E	10.0
12-09	17h08.2m	+20d47m	44d E	10.3
12-14	17h19.1m	+19d53m	43d M	10.6
12-19	17h28.9m	+19d08m	43d M	10.9
12-24	17h37.9m	+18d30m	43d M	11.2
12-29	17h46.1m	+17d59m	43d M	11.4
01-03	17h53.7m	+17d35m	43d M	11.7
01-08	18h00.6m	+17d17m	44d M	12.0
01-13	18h06.9m	+17d05m	45d M	12.2

C/1995 Q1 (Bradfield)

DATE 00UT	RA 2000	Dec	EL Sky	Mag
11-19	10h31.2m	+64d30m	102d M	10.7
11-24	10h03.4m	+70d17m	109d M	10.9
11-29	09h11.6m	+75d31m	115d M	11.1
12-04	07h34.9m	+79d06m	120d M	11.4
12-09	05h23.0m	+79d29m	123d M	11.6
12-14	03h44.4m	+76d52m	125d E	11.9
12-19	02h51.6m	+73d03m	129d E	12.2
12-24	02h23.8m	+69d06m	124d E	12.4
12-29	02h08.5m	+65d23m	121d E	12.7
01-03	02h00.0m	+62d03m	118d E	13.0
01-08	01h55.4m	+59d05m	114d E	13.3
01-13	01h53.3m	+56d31m	110d E	13.5

73P/Schwassman-Wachmann 3

DATE 00UT	R.A. 2000	Dec	EL Sky	Mag
11-19	19h46.4m	-30d50m	57d E	7.6
11-24	20h11.2m	-29d57m	57d E	7.8
11-29	20h34.4m	-28d42m	58d E	8.0
12-04	20h56.1m	-27d18m	58d E	8.2
12-09	21h16.3m	-25d48m	57d E	8.5
12-14	21h35.1m	-24d13m	57d E	8.7
12-19	21h52.6m	-22d35m	56d E	8.9
12-24	22h09.0m	-20d57m	55d E	9.1
12-29	22h24.4m	-19d19m	54d E	9.3
01-03	22h38.8m	-17d42m	53d E	9.5
01-08	22h52.5m	-16d06m	51d E	9.8
01-13	23h05.5m	-14d32m	50d E	10.0

45P/Honda-Mrkos-Pajdusakova

DATE 00UT	R.A. 2000	Dec	EL Sky	Mag
11-19	18h46.3m	-25d37m	44d E	13.2
11-24	19h00.2m	-25d23m	42d E	12.4
11-29	19h14.9m	-25d03m	41d E	11.5
12-04	19h30.2m	-24d35m	39d E	10.6
12-09	19h45.6m	-23d59m	38d E	9.6
12-14	20h00.5m	-23d15m	36d E	8.7
12-19	20h13.9m	-22d24m	34d E	7.9
12-24	20h24.2m	-21d30m	32d E	7.4
12-29	20h29.5m	-20d35m	28d E	6.9
01-03	20h28.1m	-19d43m	23d E	7.0
01-08	20h18.4m	-18d49m	16d E	7.1
01-13	19h59.4m	-17d44m	07d E	7.4

ORBITAL ELEMENTS

Object	de Vico	Bradfield	Schwassmann-Wachmann 3	Honda-Mrkos-Pajdusakova
Peri. Date	1995 10 06.02	1995 08 31.42	1995 09 22.76	1995 12.25.93
Peri. Dist.(AU)	0.6589	0.4364	0.9328	0.5319
Arg/Peri.(2000)	012.973 deg	331.163 deg	198.776 deg	326.061 deg
Asc. Node(2000)	079.612 deg	178.052 deg	069.947 deg	089.167 deg
Inclination (2000)	085.391 deg	147.393 deg	011.423 deg	004.250 deg
Eccentricity	0.9627370	0.9980457	0.694799	0.824302
Orbital Period(yrs)	74.36	-3337	5.34	5.27
Source	MPC 25715	MPC 25714	IAU Catalog	MPC 20124

Celestial Calendar - Dec 1995

by Richard Stanton

Lunar Phase	time	date	rise	trans	set
FM	17:28	06	16:58	00:45	06:41
LQ	21:33	14	23:48	05:34	11:53
NM	18:23	21	06:38	11:49	17:01
FQ	11:07	28	11:50	18:16	00:49

Mercury	Dist:	1.14AU	Mag:	-2.0
date	rise	trans	set	RA Dec
07	07:54	12:34	17:13	17:27.3 -25:00
17	08:25	13:03	17:42	18:36.1 -25:25
27	08:42	13:29	18:16	19:41.3 -23:22

Venus	Dist:	1.34AU	Mag:	-4.3
07	09:17	13:59	18:42	18:53.6 -24:25
17	09:26	14:14	19:02	19:47.3 -22:55
27	09:28	14:26	19:24	20:39.2 -20:18

Mars	Dist:	2.32AU	Mag:	+11
07	08:45	13:27	18:09	18:22.8 -24:19
17	08:38	13:21	18:05	18:56.3 -23:50
27	08:28	13:16	18:03	19:29.8 -22:54

Jupiter	Dist:	6.24AU	Mag:	-2.0
07	07:50	12:37	17:23	17:33.6 -23:01
17	07:21	12:07	16:54	17:43.4 -23:07
27	06:52	11:38	16:24	17:53.3 -23:11

Saturn	Dist:	9.79AU	Mag:	+0.07
07	12:40	18:22	00:08	23:20.3 -06:39
17	12:02	17:44	23:27	23:21.6 -06:29
27	11:23	17:07	22:51	23:23.5 -06:15

SOL Star Type G2V	Begin	End
07 07:09	11:59	16:49 16:54
17 07:16	12:04	16:51 17:38
27 07:21	12:09	16:56 18:22

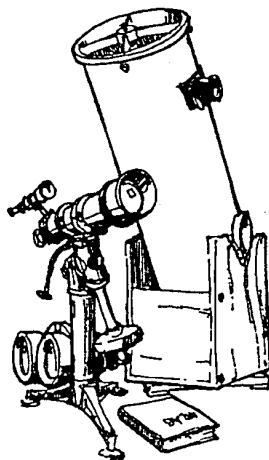
Astronomical Twilight	Local Midnight	Begin	End
JD 2,450,058	07	05:36	18:22
JD 2,450,068	17	05:43	18:24
JD 2,450,078	27	05:48	18:30

Sidreal Time	Transit Right	07	00:00	=	04:54
Ascension at	17	00:00		=	05:48
Local Midnight	27	00:00		=	06:13
Darkest Saturday	Night:				23-Dec-1995
Sunset					16:54
Twilight End					18:27
Moon Set					19:19
Dawn Begin					05:45

1995/1996 SJAA Calendar

General Meeting		Houge Park Star Party	Observational Astronomy Class
Dec	9	29	None
Jan	6	26	27
Feb	3	23	24
Mar	2	22	23

Please read your *Ephemeris* each month for changes



Telescope Loaner Status by Paul Barton

No.	Name	User	Due Date
1	4-1/2" Newt/P Mount		available
2	6" Dobson	John Paul Dasilvia	due back
3	4" Quantum	T A Sandstrom	11/23/95
6	C-8 Celestron	Jim Marguis	due back
7	12-1/2" Dobson	Tom Rice	due back
8	14" Dobson	In for refurb	
9	C-11 Celestron	Richard Navarrete	indefinite
15	8" Dobson	Bob Elsberry	due back
16	solar scope	Bob Madden	indefinite
18	8" Newt/P Mount	Jerry Lovelace	1/6/96
19	6" Newt/P Mount		available
21	10" Dobson		available
23	6" Newt/P mount	Bob Ashford	12/6/95

There are several small refractors available.

If you want to borrow a telescope call Paul Barton (number is on the credit Marque) and get your name on a general list (any telescope) or on a specific telescope list.

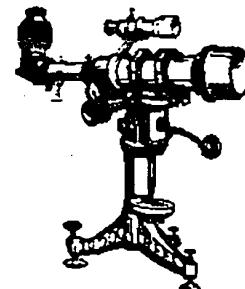
Wait List
Steve Wincor C-8

ASTRO ADS

ASTRO ADS are free to all noncommercial advertisers wishing to sell astronomically related products or services. Please send your ad directly to the Editor, (my address is in the header on the last page).

Wanted: Left over cabinet grade plywood for use in homemade dobsonian. What I don't use will be donated to the Chabot Telescope Maker's workshop. Call Doug (415)961-2826 email dferrell@adoc.xerox.com

Star Instruments 12-1/2 inch, f/9, Ritchy Chretien, GEM - stepper driven, 2-inch stardiaq. and 3-2-inch EP. Complete w/ battery and drive. Chip on primary; doesn't hurt image. Newly recoated primary. All overhauled and working. Exceptionally easy to collimate. Very compact for a large scope (like a Cassegrain). Designed for photography. \$2,000 or \$1500 w/out EPs.
Call Paul Barton (408) 377-0148



Officers and Board of Directors

Pres: Bob Brauer	408-292-7695
VP: Jack Petersen	408-262-1457
Tres: Bob Elsberry	408-281-3559
Sec: Jim Van Nuland	408-371-1307
Dir: Rich Neuschaefer	408-446-0975
Dir: Ed Erbec	408-379-5413
Dir: Bill O'Shaughnessy	408-984-3985
Dir: Lew Kurtz	408-739-7106
Dir: Bob Madden	408-264-4488

Ephemeris Contributors

Don Machholtz	916-346-8963
Richard Stanton	408-662-0205
Paul Barton	408-377-0148
Mark Wagner	
Dick Suiter	
<i>Editor</i>	
Lew Kurtz	408-739-7106

Members are encouraged to submit articles for publication. Articles received by the 12th will be put in the following month's newsletter. All submissions should be sent to the editor, Lew Kurtz. e-mail to lewkurtz@aol.com is best, a text file on a 3-1/2" IBM or MAC diskette is fine, but typed or written is accepted. My home address is 1336 Bobolink Circle, Sunnyvale, California, 94087.

SAN JOSE ASTRONOMICAL ASSOCIATION MEMBERSHIP

Name: _____

Address: _____

Phone: _____

Please bring this form to any SJAA Meeting or send to Bob Elsberry, Treasurer San Jose Astronomical Association, 5380 Pebbletree Way San Jose, CA 95111-1846 Telephone: (408) 281-3559

Membership Only (\$15)
Membership with Sky and Telescope (\$39)
Junior (under 18) with Sky and Telescope (\$25)

New Renewal

MAKE CHECKS PAYABLE TO "SJAA"

SAN JOSE ASTRONOMICAL ASSOCIATION
5380 PEBBLETREE WAY
SAN JOSE, CA 95111-1846

NON-PROFIT ORGANIZATION
U.S. POSTAGE PAID
PERMIT NO. 5381
SAN JOSE, CALIFORNIA

SJAA HOTLINE

24 HOUR INFORMATION
408-559-1221