

SJAA EPHemeris

May 22 is Astronomy Day — Welcome visitors to the San Jose Astronomical Association program at The Tech Museum. Join us at any SJAA activities below. See page 5 for star party information.

The Celestial Tourist Speaks

Jay Reynolds Freeman

If anyone does not believe that California had an uncommonly bad winter, consider the awful truth: I bought an Astro-Physics refractor in early December, 1998, and did not have first light until April.

High-end telescopes tend to change hands in lock-step whenever somebody buys a new one. A friend had ordered a 155 mm f/7 EDF from Astro-Physics when the company last took orders, and mentioned to several people that he would probably sell his old big refractor when the new unit arrived. I was the first person to express definite interest in the used instrument, and I continued to whine and whimper at regular intervals during the ensuing months, so I ended up getting the telescope. I have been trying to sell my own "old" instrument — a Meade 127 ED — but with no luck so far.

My new acquisition is the optical tube assembly for a 1987 model Astro-Physics 6-inch f/8 triplet refractor. It came with an assortment of tube rings and associated hardware, a right-angle finder, an electric focuser — which I promptly removed — and a simple wooden carrying case, which resembles either a weapons carrier for an anti-tank missile or a coffin for the cruelly murdered body of a half-starved and emaciated nine-year-old child.

Buying things from friends makes for weird pricing. The prior owner originally asked \$1750 for the telescope, but I protested that that wasn't nearly enough. We settled on \$2000, an amount which he thought too high and I too low. Yet our

SJAA Activities Calendar

Jim Van Nuland

May

- 22 General Meeting at Hough Park, 8 p.m., Chris Cody, "Bad Astronomy"
- June**
- 4 Hough Park star party. Sunset 8:25 p.m., 71% moon rises 0:39 a.m.
- 5 Short Star party at Peak. Sunset 8:22 p.m., 61% moon rises 1:14 a.m.
- 12 Star party at Coe, Peak. Sunset 8:27 p.m., 1% moon invisible
- 18 Hough Park star party. Sunset 8:31 p.m., 34% moon sets 0:40 a.m.
- 19 Observational Astronomy class, Hough Park, 8 p.m. Planetary observing: What to look for on each of the planets, e.g., why Sinus Meridiani is important on Mars; how to look for Encke's division, etc.
- 26 General Meeting at Hough Park, 8 p.m., Bob Garfinkle, "Observing the Rays and the Bright Spots on the Moon"

July

- 9 Hough Park star party. Sunset 8:30 p.m., 12% moon rises 3:42 a.m.
- 10 FPOA/AANC Star-B-Q, Fremont Peak. Star parties at Coe, Peak. Sunset 8:28 p.m., 6% moon rises 4:33 a.m.
- 17 Observational Astronomy class, Hough Park, 8 p.m. Catalogues, techniques for finding and identifying objects; such topics as how to find a 12th magnitude planetary in a dense star field, why an OIII filter is no good on the Horsehead, etc.
- 23 Hough Park star party. Sunset 8:22 p.m., 83% moon sets 3:02 a.m.
- 24 General Meeting at Hough Park, 8 p.m., Ernie Piini on February eclipse
- 30-31 SJAA Weekend at Glacier Point, Yosemite National Park

Speakers needed: August 28, October 23, November 20, December 18

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

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The Celestial Tourist Speaks

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complaints were of roughly the same volume, so I suspect the price was fair.

I took it home and the rains began. Oh, there were two good nights between December and April, but I was anxious to carry on with my primary observing program, chasing down faint fuzzies with Harvey, my Celestron 14, so I kept putting off using the big refractor till a first-quarter Moon night, and never got one. The San Jose Astronomical Association's in-town public star party, at Hough Park in San Jose, California, on the night of Friday 23 April, finally provided a chance.

Carrying a big refractor in a Geo Metro is an interesting exercise in packing. The case is far too long to fit in the cargo area, even with the rear seats folded forward, so I ended up reclining the front seat as far as it would go, and loading the wooden container stiffly on top of it, much as if it were a very nervous passenger, trying to lean back and relax, and failing miserably. In that position it was clearly visible from the outside, so that every passing police officer could decide whether I was carrying a body or a bazooka. Fortunately, my Losmándy G-11 mount and my other observing gear all pack quite compactly, and I had plenty of bungee cords to hold the case in place, so I managed, but even so, hauling the new refractor is a lot more hassle than hauling my C-14.

Setup was fairly quick. I have the pier extension for the Losmándy, which put the dovetail clamp pretty high, but the six-inch's tube is an easy lift. I had put it into the box with tube rings and dovetail plate attached, and it was no trouble to pick it up, slide it into position, and fasten it in place. I didn't actually think to weigh the tube, but I needed only one 10-Kg (22 pound) counterweight for the mounting, and it was further out than the tele-

scope.

I used Venus to line up the finder, and happily noted through the main eyepiece that there was surprisingly little color visible. The newer Astro-Physics refractors have no color that I can detect, and this one isn't quite that good, but it has far less color than does my smaller and slightly slower Meade 127 ED doublet. A look at Sirius at 248x confirmed the good color correction, though seeing at its relatively low elevation was not up to doing a star test to check on spherical aberration.

Then I looked at the Moon, which was much higher in the sky and had better seeing. My 248x eyepiece — a new Pentax 5 mm

Carrying a big refractor in a Geo Metro is an interesting exercise in packing.

SMC ED Orthoscopic — gave a little too much magnification, so I dropped back to an 8 mm Brandon and 155x. The view was wonderful. The terminator was past the Straight Wall and Birt, but I am not much of a lunar observer and had not happened to have seen the Straight Wall in such shallow illumination before, and so did not immediately recognize it. Rima Birt was prominent.

I moved north to the Alpine Valley, where persistent observation yielded no more than an occasional hint of the central rille — not enough to log — then dropped back to Archimedes and the Hadley area of the Apennines. I could see several rilles in the system that extends from Archimedes toward the Apennines, and had a particularly nice view of Rima Hadley, not only the portion that runs parallel to the Apennine front, but also the portion at nearly right angles to it, that passes close by the Apollo 15 landing site. This is one of my favorite areas on the Moon, for

through a decent-sized amateur telescope I can identify features and vistas that I have seen via live video from the lunar surface, as the astronauts operated their camera. The view through the six-inch was almost the equal of one I once had through my C-14, the difference being that the six-inch did not show the crater that nearly bridges the rille where it turns outbound from the mountains — I think that crater is sometimes called Hadley C.

I spent a fair amount of time showing this view to members of the general public who showed up for the star party, and to other telescope operators. Most everyone thought it was wonderful. A few lunar and planetary enthusiasts, who did not have similarly-sized refractors, told me how sad it was that my new telescope had terrible optics, and hinted that if I wanted to reclaim my investment, they would be willing to take it off my hands, perhaps even for the price I had paid for it.

Mars was lower in the sky, and was disappointing, not only because of its position but also because the seeing deteriorated slightly as the night wore on. The central meridian was at about 230 degrees. At 155x, in good moments, I could see the Hellas Basin just coming around the limb, much dark area surrounding it, though sufficiently foreshortened not to show any structure, the north polar cap, and a more nearly central small darkish area, evidently Trivium Charontis. That's not too shabby for the conditions.

I spent a little while Messier hunting — no easy task under the Moon and city lights. Nevertheless, at 78x (16 mm Brandon) I found and easily resolved most of the winter-sky galactic clusters. I looked at a few wide double stars, too, but never did think to try a star test.

So at the end of the first night out, I am well pleased with my new

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Celestial Tourist Speaks

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telescope. The 1987 Astro-Physics 6-inch f/8 shows every promise of being exactly what I expected; namely, a high-quality triplet refractor with immaculate optics, well-suited among moderate apertures for spectacular lunar and planetary views.

Nevertheless, some among you may be wondering why I bought it in the first place.

Don't I have a Celestron 14, and don't I always say that aperture wins? Haven't I often said that it appears to me as if even high-end six- and seven-inch refractors are routinely outperformed not only by my C-14 but also by humungous but transportable Dobson-mounted Newtonians? Isn't it a little odd to buy a telescope which is lower in performance and more cumbersome to transport than one I already own?

Well, yes, yes, yes, and yes. With respect to the third question, I reiterate that I have compared six- and seven-inch refractors to the other telescopes mentioned on numerous occasions, and have yet to see circumstances when I preferred the view through the smaller instrument. (I should also hasten to add that many other observers who were present on those various

occasions do not agree with me.)

I bought the telescope for several reasons. First, I like telescopes, and I enjoy having different kinds to play with. Second, I like quality in my toys, and the Astro-Physics refractors with which I have been familiar deliver that commodity in large lots. Third, I wish to investigate more carefully the issue of relative performance between high-end refractors and some of the other telescopes I have mentioned, and it will help to own this one, even though I can neither transport nor mount both it

and my C-14 at the same time.

The apparent awkwardness of size may diminish as I acquire more experience with the telescope. Even if it does not, there is probably a larger telescope transporter than a Geo Metro in my future. At that point, the big refractor will make an excellent telescope for public star parties, and for occasions where I do not wish to wrestle with the 23 Kg (52 pound) tube assembly of my C-14.

And there is another reason. I have thought of a wonderful color scheme for a fair-sized refractor. Just don't anybody tell Roland what it is...

Meteor Watch

David North

Only one semi-shower on the list this month: the June Bootids.

This shower is not in the current IMO working list of visual meteor showers, but in 1997 an apparent outburst of activity occurred on June 27.

Despite coinciding with a full moon, a watch for their possible re-

occurrence may be worthwhile for 1999.

Concentrate on the hours between sunset on the 27th and 1am the next morning. The U.S. East coast may get the best shot... These meteors would appear verrry slow at 19 km/s.

Radiant: RA 14h 56m, Dec. +58.

How To Write Your Own "Mooning" Column

David North

So you want to write a Moon column? Nothing to it.

First, open your RASC Observer's Handbook to the appropriate month (June in this case). Check the libration dates. Hmm. The east limb (Crisium) is most exposed at just before first quarter (on June 18), which means the maria will be at maximum visibility (contrast from overhead light). This might be worth mentioning.

The west limb (Orientale) is librated best at third quarter (June 6)... bingo! First and third quarter are both good for looking at maria/highland contrasts at strong librations. Could be a theme... but too early to say.

The northern libration looks uninteresting, but the southern libration is best near full moon, which is also good for seeing things on the terminator. This is a good libration month — remember to suggest folks look at the south on the days near full.

Okay, any other weird lunar events listed? There are several "moon near this and that" events (planets and stars) with three occultations not visible from the U.S. Nah, don't mention them.

Whoa, wait a minute. Here's something. The greatest northern declination for June is on the 14th, just after new moon. Now that's neat!

Thing is, when the moon is highest in its orbit just after new, you get the best opportunities to see a young moon. They will both be crashing into the horizon at very steep angles, leaving quite a bit of "moon elevation" even after the sun has set.

So this month is a great one to scan with binoculars just after sunset to see if you can catch a tiny sliver in the sky. Only takes a few

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Mooning with North

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minutes, and then it's off to the deep sky...

Make sure you have a good western horizon.

Of course, it also means this is a good month for looking at the early moon features over the next few nights. In some ways, this is the best time for catching the waxing views of the Gang Of Four, so maybe that should be the discussion theme for this month.

The Gang Of Four?

This is four monster craters on the same line of lunar longitude (roughly 60 degrees east) that emerge into best viewing between two and four days after new, depending on libration and such. Let's see when they will just open up...

How do we do that? Go to Akkana's "Hitchhiker's Guide To The Moon" and look at terminator placement. We know the craters are fully open when the terminator reaches 55 degrees east. Let's see ... that happens at a bit before midnight on June 15. Perfect!

So the idea is to let people know this very young moon will also be showing these four cool craters, and that there's a reasonable chance to catch them in the act due to the extreme elevation.

What's so great about the Gang Of Four?

For one thing, just their arrangement. They are evenly spaced and almost identical in size.

In order from the equator running south they are Langrenus (a new, well-formed crater with excellent secondary impacts nearby) Vendelinus (a ruined old mess with a nicely formed crater — Lame', as in

something Ava Gabor might wear — smacked into its rim) Petavius (youngish, with the flat out most obvious rille on the moon running out from its central peak, looking like a minute hand on a railroad watch) and Furnerius (an older crater with a wonderfully complex rille system in its complex interior).

They are a microcosm of mooniness. Comparing them you can see the effects of age, and of time of formation. You can see rilles, secondaries, terracing, mass wasting, superimposition... it's a convenient classroom of similar craters of different ages and circumstances.

Suggest folks compare and contrast, and see what they can figure out just from looking. Use noggin's, etc. All good fun.

Okay, so that's about it for June. There are lots of other things that could

be said, but space and time require a halt somewhere.

Anyway, that's pretty much how you do it.

Oh, wait a minute. I forgot to mention how you add the flowery language and wax poetic now and then to lamely attempt to convey something of the aesthetic effects of these sights.

Then again, "Ooooo" and "wooo!" really work pretty well too.

Oh, by the way, the name Gang Of Four? Not official; I made it up. Based on the folks who took over China after Mao died. Just liked the way it sounded and it seemed to fit these craters for some reason. I suppose making up stuff like that is also part of putting together a column like this.

It's not like I really know. I'm making this up as I go along.

The Shallow Sky

Akkana Peck

Mars is past opposition now, but that's no reason not to take a look! The red (or orange, or brown, depending on who you talk to) planet is now high in the sky in the early evening, so even though it will shrink slightly from 14.3" to 11.5" this month, it will actually be easier to see detail on the planet without having to stay up late. It makes a nice naked-eye pattern with Spica in the southern sky. Instead of watching TV after dinner, why not roll out whatever scope you have (or get one from our loaner program if you don't have one), set it up in your yard or driveway, and see what you can see?

If you wait until the planet is high in the sky, even a 4.5" reflector or 80mm refractor will show some detail, and larger apertures will show more, especially on nights when the air is steady. Sinus Sabaeus/ Meridiani, Acidalia Planitia, and the easy-to-see dark Syrtis Major and light Hellas should be rotating into view on late May/early June evenings. The northern polar cap still should be easy to see, though small (don't mistake it for Hellas, a much larger feature).

Remember, you can get Mars info and links at <http://www.shallowsky.com/mars.html>.

Meanwhile, Venus is having a wonderful showing and stays high in the sky remarkably late into the evening. By late June it finally begins to show a slightly crescent phase as it catches up with the earth and prepares to overtake us in its more rapid trip around the sun. On June 12th, it passes near M44, the Beehive cluster; this should be a pretty sight in binoculars or a wide-field 'scope. Four nights later, on the 16th, Venus and a slim crescent moon should make a nice pair. With a bigger telescope, try to see if you

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Shallow Sky

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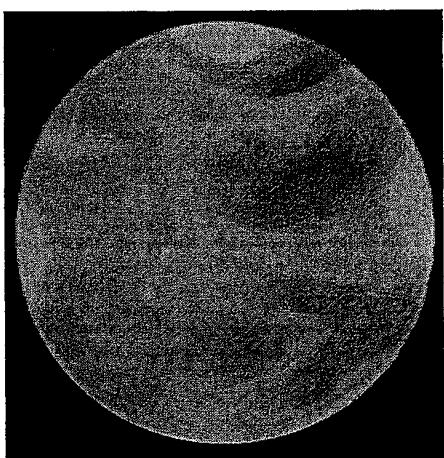
can detect any patterns in the shape of the clouds on the terminator or in the clouds on the lit portion of the disk. Some observers on the shallow-sky list have reported seeing detail, but these sort of sightings are hard to confirm or verify. Try using filters to dim the brightness of this very reflective planet. Let me know what you see!

Mercury chases after Venus back into our evening sky. During the month, it dims from negative magnitudes to magnitude .6, still rather bright, and since by the end

Mercury chases after Venus back into our evening sky.

of the month it doesn't set until an hour and a half after the sun, this will be an excellent month for Mercury watchers. To look for detail on the planet with a telescope, or just for the challenge of finding it with binoculars or the naked eye, try looking for it as soon as you can after sunset.

Pluto is in Ophiuchus, not far



Mars sketch by Akkana Peck, observed 5/8/99 11:45 p.m. PDT, 128mm refractor at 200x. Features include the North Polar Cap, Acidalia, Lacus Solis, and Tharsis. Sketch is true orientation, image inverted after scanning.

from its position last month. Use a finder chart or planetarium program to locate and identify the magnitude 13.7 speck; the chart in the RASC Observer's Guide is more reliable than most.

Jupiter and Saturn rise nearly together a few hours after midnight,

Jupiter preceding the fainter ringed planet by a little less than an hour. They're at their best in the early morning sky. The smaller gas giants, Uranus and Neptune, are close together in Capricornus and can be observed in the late night and morning hours.

What to Expect at an SJAA Star Party

Morris Jones

This note is for you. Yes you! You picked up this copy of *The Ephemeris* at a local telescope store, The Tech museum, or perhaps you found us on the world-wide web. Now you're intrigued to get looks through a variety of telescopes, or perhaps you'd like to bring your newly purchased instrument out with more seasoned observers and get some help finding things to see in the night sky.

You're certainly on the right track. The San Jose Astronomical Association includes some of the most knowledgeable and friendly observers you'll find anywhere in the country. Our membership has been nationally recognized and frequently published. We observe with an enormous variety of telescopes, from monster Dobsonian reflectors to tiny refractors; sun scopes to Schmidt cameras.

Our list of activities on the front page lists several observing events at a variety of locations in and around San Jose. Each star party has its own character worth knowing about before you visit. Unlike other social events, star parties don't have a host or any kind of formal structure. Just bring your telescope or binoculars, your warm clothes and thermos, and find a place to settle and join the conversa-

tion under the night sky. Keep in mind also that star parties depend on having a clear sky — stars can't be seen through the clouds! If the weather looks cloudy, you may not find anyone at an announced star party.

Fremont Peak: Just south of San Juan Bautista at Fremont Peak State Park you'll find some of the darkest skies within 100 miles of San Jose. Finding the park down county road G1 could mean making a wrong turn if you're not careful at the bottom of the hill by the San Juan Inn, but once you've made your way to the top, you've arrived at the local mecca for amateur observing. On warm new moon weekends, it's not uncommon to find forty or fifty amateur telescopes set up at several locations. Up the well-marked observatory road, you'll

frequently find SJAA members conducting official public viewing sessions on the 30-inch telescope. Over in the Southwest parking area, more SJAA members and astronomers from all over the area will be set up for nights of observing and sharing views. Wander around the park, and don't be shy to ask "What are you looking at?" Shoulder surfing is a favorite activity for public and astronomers alike.

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Rendevous with an old friend, Comet Hale-Bopp

Jane Houston

About Star Parties

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Henry Coe State Park: This location has good dark skies and sometimes better weather than Fremont Peak, but is much less frequently visited these days by SJAA observers. The observing area is on a grassy knoll behind a gate near the visitor center. Come before sunset if you can, and you may find some observers setting up their gear. They'll be happy to escort you behind the gate and share views through the telescopes. However if weather is good at Fremont Peak, it's not uncommon for Henry Coe to be abandoned in favor of the darker skies and larger community at the Peak.

Houge Park: The Houge Park star parties, near Campbell and Los Gatos, always draw a good variety of astronomers and telescopes. These events are as much social as they are astronomical — geared to giving the public interesting views through a variety of telescopes, and providing our members with a time to gather and socialize. For a friendly casual introduction to SJAA and astronomy, this party is your best bet. Here at Houge Park, SJAA members will be happy to introduce you to our club, as well as share great views through the telescope. The skies are better than you would expect for a mid-city location. The Houge Park events are usually scheduled to have some excellent views of the moon available, as opposed to the moonless nights planned for our dark sky locations.

My third night of observing near Ayers Rock, Australia (April 14th, 1999) was upon me nearly as soon as the second night was finished.

Funny how that happens, isn't it? Great observing weather means you stay out late, sleep in late and then prepare for your next observing session. Especially on this trip, I didn't want to miss any of the southern photons, either! A year's worth of planning were crammed into 5 nights of observing.

My project for this evening was to explore and sketch portions of the Large and Small Magellanic clouds, and to try to locate Comet Hale-Bopp. I had a couple charts showing the location of the comet which a friend printed for me using Megastar. I knew exactly where it should be on these nights. R.A. 5h 40m Dec -64 (give or take a little).

Just looking up at the southern sky, and aiming my telescope and camera in the same direction at those objects I admire on astronomy calendars was thrilling. In fact, some of my other projects during these five days of observing were selected based on favorite astrophotos.

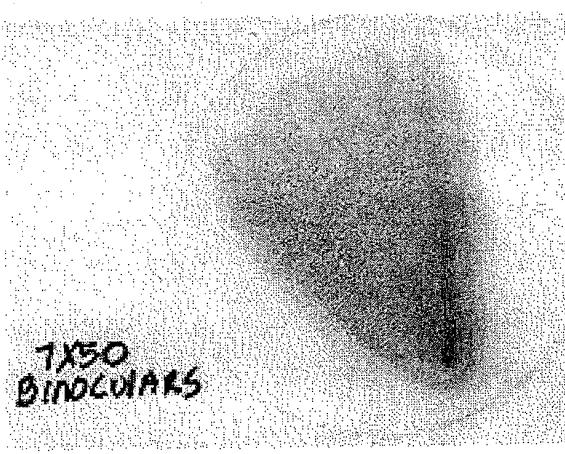
After an eye break, a snack and chaise lounge stretchout, I tackled Hale-Bopp. Nearby tiny NGC open clusters 1868, 1892, 1866 and

1831 formed an arc or shield on one side of the comet. It was very nice to see my old friend once again and say "farewell" and "thanks for the memories". Like many other amateur astronomers, my enthusiasm for visual astronomy and especially for public astronomy skyrocketed during the Hale-Bopp days. I found it right away, nestled close to those dimmer NGC objects two degrees above the upper border of the Large Magellanic Cloud. I had spent much more time on the planning than on the actual starhopping. Maybe I was imagining it, or maybe I was being subjected to wishful seeing, but I thought I detected a small coma on one of the fuzzballs. I called over to the gathered Aussie astronomers, and was especially interested in the opinions they had of what I had centered in my eyepiece at 202X in my F5.74 12.5 inch LITEBOX travlescope.

"Yup, that's the comet, all right" and "If it's not, you have discovered a new one," two of the observers commented.

Everyone who was interested came over and had a look. I tipped my cap to Comet Hale-Bopp, and wished the tiny cold object a pleasant journey through the cosmos. Then I continued with my list of other objects to find.

Hale Bopp as we saw it during 1997, sketched by author Jane Houston



Comet Comments

Don Machholz

A new comet has been discovered in the Southern Hemisphere. It is visible in our evening sky, while Comet LINEAR (1998 T1), dimmer than expected, is in the morning sky.

Steve Lee visually discovered a new comet in the southern sky while observing from a star party in Australia. Then at magnitude 9, the comet, C/1999 H1 (Lee) should brighten as it continues to move north and then behind the sun. It will emerge into our morning northern sky in late July.

The SOHO satellite found two new comets. One (C/1999 G2) was found on April 13 and the other (C/1999 H2) on April 19. Both disappeared.

The LINEAR program found two more comets. The one found on April 7, C/1999 G1 was closest to the sun last September at 4.4 AU and remains faint. The other (C/1999 H3) was found on April 22 and will be closest to the sun this August at 3.5 Astronomical Units. It may brighten to magnitude 13.

The Catalina Program found a new comet on March 23. C/1999

F1 is still nearly three years away from perihelion at 5.8 AU. It is magnitude 19 now, and may brighten by then to magnitude 14.

COMET HUNTING NOTES: Comet Lee is one of four comets found by amateurs at star parties during the past 25 years. In 1975 Doug Berger found Comet Kobayashi-Berger-Milon while

looking for M 2 at a San Jose Astronomical Association event. In 1985 I found Comet Machholz (1985e) at the Riverside Telescope Makers' Conference. In 1995, at a star party in Arizona, Thomas Bopp found a comet near M 70. Three of these four finds were accidental finds, and those three comets reached magnitude seven or brighter.

Ephemerides

C/1999 H1 (Lee)

Date(00UT)	R.A. (2000)	Dec	El	Sky Mag
05-07	09h36.6m	-38d48'	109d	E 7.8
05-12	09h14.1m	-27d31'	98d	E 7.7
05-17	08h58.8m	-17d22'	88d	E 7.6
05-22	08h48.0m	-08d49'	78d	E 7.6
05-27	08h40.2m	-01d49'	69d	E 7.5
06-01	08h34.1m	+03d54'	61d	E 7.5
06-06	08h29.2m	+08d38'	53d	E 7.4
06-11	08h24.8m	+12d38'	46d	E 7.3
06-16	08h20.8m	+16d05'	39d	E 7.1
06-21	08h16.6m	+19d07'	33d	E 7.0
06-26	08h12.3m	+21d51'	27d	E 6.9
07-01	08h07.5m	+24d22'	21d	E 6.7
07-06	08h02.3m	+26d42'	15d	E 6.7
07-12	07h56.7m	+28d52'	11d	E 6.7

C/1998 T1 (LINEAR)

Date(00UT)	R.A. (2000)	Dec	El	Sky Mag
05-07	23h36.5m	-04d04'	53d	M 11.5
05-12	23h35.9m	-04d44'	58d	M 11.2
05-17	23h34.7m	-05d33'	64d	M 11.0
05-22	23h32.6m	-06d36'	69d	M 10.7
05-27	23h29.3m	-07d58'	76d	M 10.4
06-01	23h24.4m	-09d45'	82d	M 10.1
06-06	23h16.9m	-12d09'	90d	M 9.8
06-11	23h05.6m	-15d28'	98d	M 9.4
06-16	22h47.9m	-20d06'	108d	M 9.0
06-21	22h18.7m	-26d42'	121d	M 8.6
06-26	21h27.6m	-35d32'	137d	M 8.2
07-01	19h57.8m	-44d36'	153d	M 8.0
07-06	17h54.3m	-47d47'	152d	E 8.0
07-11	16h12.9m	-43d42'	136d	E 8.3

Elements

Object:	Lee
Peri. Date:	1999 07 11.1657
Peri. Dist (AU):	0.708308 AU
Arg/Peri (2000):	040.6689 deg.
Asc. Node (2000):	162.6375 deg.
Incl (2000):	149.3558 deg.
Eccen:	1.00
Orbital Period:	Long Period
Ref:	MPC 34421
Epoch:	1999 07 11
Absol. Mag."/n":	7.0/4.0
Object:	LINEAR (T1)
Peri. Date:	1999 06 25.2578
Peri. Dist (AU):	1.468118 AU
Arg/Peri (2000):	226.3361 deg.
Asc. Node (2000):	153.3540 deg.
Incl (2000):	170.1601 deg.
Eccen:	0.99915
Orbital Period:	71,000 years
Ref:	MPC 33451
Epoch:	1999 01 22
Absol. Mag."/n":	7.8/4.0

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WANTED: Klee Barlow. I lent mine to someone at Houge Park last September, I think, and unfortunately left before it was returned. Would the lender please get it back to me? Thanks much! Jim Van Nuland.

Loan Program Supporters

Thank you to the following people for their support to the loaner program: Akkana Peck for the donation of two eyepieces. Alexander Koczur for the donation and construction of a storage container for the many pieces for Scope #29, the astrophotography scope. Manoj Khambete for his generous monetary contribution.

IC 2220 — The Toby Jug Nebula

Jane Houston

After the first night of astrotourism, most of us settled down and began to undertake our various projects. I had my project lists just like everyone else, but one object was added. I had never even heard of IC 2220, the Toby Jug Nebula before. But on the long flight from LAX to Sydney, I sat near astrophotographer Bill Williams from Florida and his 10 year old son Chad. Chad was looking at David Malin's AAT photographs of the southern sky.

Chad was wondering if I could help him see one of the objects in the book. It was called IC 2220 - the Toby Jug Nebula.

"Huh, never heard of it. Where is it?", I asked.

"I don't know," replied Chad.

Finally, armed with the coordinates: 07hr 56min 48sec - 59° 07'. I searched the Southern Sky volume of Uranometria which I had packed. Nearby, just a few degrees south, was a nice cluster, NGC 2516, in Carina. Above this object, right there on page 424, at just about the right R.A. and Dec was an object with another number.

"That's gotta be it" Bill agreed.

"Ok, I'll find it tonight" I responded.

The Toby Jug Nebula surrounds a bright but cool star known only by its number HD 65750. It is the result of light reflected from particles that the star itself has ejected.

IC 2220 gets its name from its likeness to an English drinking vessel, the Toby Jug. It's a bipolar reflection nebula surrounding the bright cool star.

This seemed like a pretty interesting project. The research was fun. That second night at Ayers Rock I hunted for the Toby Jug Nebula. NGC 2516 was a beautiful

naked eye open cluster nearby. Colorful stars abounded within the cluster. 15 degrees south of Canopus, this cluster alone was worth savoring for a while. Brilliant with several nice doubles, and pretty scatterings of stars, it looked a bit like the Jewel Box open cluster, near B Crucis more commonly known as Mimosa. The red supergiant in the center of the cluster was beautiful.

I found the star which is responsible for the Toby Jug Nebula. But no nebula was visible! I had to be careful as there were several really bright stars on the upper edge of the cluster. I added an OIII filter, pumped up the power to 202X using my 9 Nagler eyepiece, and a dainty barely visible haze surrounding the star appeared. I couldn't discern the beer mug shape of the Toby Jug naked eye, but could definitely see the haze around the star. This is certainly a more impressive photographic object than a visible one. Everyone wanted to see it anyway, since nearly the entire group was in on the research. I showed the cluster first, so everyone got their money's worth.

Next morning I bumped into Chad while we were returning from a dawn wallaby-viewing walk

"Found it," I reported.

"You did? Cool!" replied Chad.

It wasn't 'til two nights later that Chad got to find the Toby Jug Nebula by himself thru Strider the 12.5 inch wonderscope. Chad will be giving a report to his classmates in Boca Raton, Florida soon. I'll bet he'll describe how he starhopped from NGC 2516 in Carina up to the Toby Jug Nebula. Sometimes what you find yourself through a telescope is just as cool as what you see in an astrophoto.

Celestial Calendar

June 1999

Richard Stanton

(Times are Pacific Daylight)

Lunar Phases:

	Dt.	Rise	Trans	Set
LQ	21:07	06	01:16	06:52
NM	12:03	13	05:56	13:12
FQ	11:13	20	13:10	19:31
FM	14:37	28	20:27	00:43

Nearer Planets:

	Dt.	Rise	Trans	Set	R. A.	Dec.
Mercury - 1.03 A.U. Mag. -1.6						
07	06:38	14:12	21:45	06:02.4	+25:24	
17	07:20	14:47	22:13	07:18.3	+24:05	
27	07:48	15:00	22:11	08:12.1	+20:35	

Venus - 0.66 A.U. Mag. -5.3

07	09:05	16:24	23:42	08:16.8	+22:13
17	09:15	16:23	23:30	08:55.7	+19:22
27	09:21	16:16	23:11	09:29.2	+16:02

Mars - 0.73 A.U. Mag. -1.0

07	16:02	21:33	03:04	13:30.2	-09:55
17	15:28	20:58	02:31	13:33.5	-10:34
27	15:00	20:27	01:56	13:41.3	-11:35

Jupiter - 5.42 A.U. Mag. -2.3

07	03:13	09:45	16:17	01:39.1	+09:03
17	02:38	09:12	15:46	01:46.2	+09:42
27	02:04	08:39	15:15	01:52.7	+10:17

Saturn - 9.94 A.U. Mag. +0.9

07	04:00	10:45	17:31	02:40.2	+13:16
17	03:24	10:10	16:57	02:44.5	+13:35
27	02:47	09:35	16:23	02:48.5	+13:52

SOL Star Type G2V

Intelligent Life in System?

Hours of Darkness

	Dt.	Rise	Transit	Set	R.A.	Dec.
05:29	07	05:44	13:06	20:29	04:59.7	+22:43
05:21	17	05:43	13:09	20:34	05:41.2	+23:22
05:22	27	05:46	13:11	20:36	06:22.7	+23:20

Astronomical Twilight:

	JD	336	07	03:51	22:22
		346	17	03:49	22:28
		356	27	03:51	22:30

Sidereal Time:

Transit Right Ascension at Local Midnite
07 00:00 = 15:53
17 00:00 = 16:32
27 00:00 = 17:12

DARKEST SAT. NIGHT: 12-Jun-1999

Sunset 20:32

Twilight End 22:26

Moon Set 19:26

Dawn Begin 03:50

Hours Dark 05:24

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Members are encouraged to submit articles for publication in the SJAA Ephemeris. Send articles to the editors via e-mail to ephemeris@whiteoaks.com.

SJAA Loaner Scope Status

All scopes are available to any SJAA member; contact Mike Koop by email (koopm@best.com) or by phone at work (408) 473-6315 or home (408) 446-0310 (Leave message).

Stored Scopes

These are scopes that are available for immediate loan, stored at other SJAA members homes. If you are interested in borrowing one of these scopes, please contact Mike Koop for a scope pick up at any of the listed SJAA events.

#	Scope Description	Stored by
1	4.5" Newt/P.mount	Darryl Lambert
8	14" Dobson	Ralph Seguin
19	6" Newt/P Mount	Nilesh Shah
24	60mm Refractor	Mike Koop
30	7" f/9 Newt/Pipe Mount	Mike Koop

Current Scope Loans

These are scopes that have been recently loaned out. If you are interested in borrowing one of these scopes, you will be placed on the waiting list till the scope becomes available after the due date.

#	Scope Description	Borrower	Due Date
7	12.5" Dobson	Mike Rupe	06/27/99
15	8" Dobson	Phil Robba	06/27/99
16	Solar Scope	Akkana Peck	05/05/99
18	8" Newt/P Mount	Darryl Lambert	06/27/99
26	11" Dobson	Nilesh Shah	08/01/99
28	13" Dobson	Bill Sweeney	07/25/99
29	C8, Astrophotography	Lloyd Frisbee	07/24/99
31	8"/f8 Dobson	John Templeton	04/30/99

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2	6" f/9 Dob	John Paul De Silva	?	
3	4" Quantum S/C	Manoj Khambete	6/5/99	
4	60mm Refractor	Del Johnson	Indefinite	
6	8" Celestron S/C	Srone Wiktorowicz	07/30/99	
9	C-11 Compustar	Paul Barton	Indefinite	
21	10" Dobson	Eric Anderson	6/5/99	
23	6" Newt/P Mount	Monica Patterson	5/13/99	
27	13" Dobson	Bud Wittlin	8/1/99	

Notes:

If you know how to contact John Paul De Silva, please call or send mail to Mike Koop. Do you have some space to store a scope or two? Please E-mail Mike.

Waiting List:

#	Scope Description	Borrower
16	Solar Scope	Bill Maney

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