



SJAA EPHEMERIS

EDITOR'S NOTES

We have an election coming up in February, so it's time to start encouraging new board members and officers. Anyone who is interested should contact any current board member, or make it a point to attend one of the meetings (bring your own munchies).

Mark Taylor suggested we form some smaller groups within the club to encourage get-togethers and projects involving specific interests such as ATM, photography, CCDs, Lunar and Planetary Observing, Deep Sky Observing, and other ideas and specialties. This was met with general approval all 'round, and hopefully someone will see their way clear to starting up some of these groups. The board would be delighted to help coordinate such activities.

With that idea in mind, it was suggested that we present this idea in the Ephemeris to garner suggestions for categories, and to collect the names of interested parties and put them in contact with one another. The SJAA mailing list, for those who have email, is probably an excellent resource for getting the ball rolling. Those who don't have email could simply call any board member.

November

- 1 Star party at Fremont Peak. Sunset 5:09 pm, 3% moon sets 6:24 pm.
- 7 Houge park star party. Sunset 5:04 pm, 53% moonset 11:51 am.
- 8 General meeting Houge Park 8 pm; Dr. Ken Crosswell, author of Planet Quest, will speak on the drama surrounding the discovery of planets both in our solar system and around other stars. Open board meeting 6:30 pm.
- 21 Houge park star party. Sunset 4:54 pm, 49% moonrise 11:55 pm.
- 22 Star party at Fremont Peak, Coe. Sunset 4:53 pm, 39% moonrise 0:49 am.
- 29 Star parties at Fremont Peak, Coe. Sunset 4:49 pm, no moon.

December

- 5 Houge park star party. Sunset 4:50 pm, 38% moonset 10:49 pm.
- 13 General meeting 8 pm, Speaker Bob Garfinkle will discuss what are and how to observe the dark haloed craters on the Moon. Open board meeting 6:30 pm.
- 20 Star party at Fremont Peak. Sunset 4:53 pm, 57% moon sets 11:32 pm.
- 26 Houge star party. Sunset 4:57 pm, 7% moonrise 5:11 am.
- 27 Star parties at Fremont Peak, Coe. Sunset 4:56 pm, 3% moonrise 6:07 am.

Please note that SJAA insurance only covers SJAA members at SJAA sponsored events.

REFLECTIONS ON THE VISOR

Craig D. Wandke

Nearly a quarter of a century has passed since I met Apollo 15's Jim Irwin at a book-signing in San Diego in 1974. I remember with fondness his easy presence and the awe I felt while talking to and being in the company of the gentle, soft-spoken man who had walked on the moon three years earlier.

It was for this reason that my recent visit to the Smithsonian Exhibit last month in San Jose was a memorable return to the past. As I entered the exhibit, I hurried past most of the artifacts - the Lincoln hat, Judy Garland's shoes, and Edison's lightbulb - to stand in silent awe at the aged spacesuit lit in mellow light in the display case in front of me.

Since 1974 my passion for lunar astronomy has not dimmed, and my love for the moon has been greatly influenced by the flight of Apollo 15, Jim Irwin, and his mission to the plain at Hadley, an area just west of the lunar Apennines that is just at the limit of visibility in my 4-inch refractor.

Jim, after all, was no ordinary cold, professional test pilot who was chosen for his flying skill. That he certainly was, but, in addition, he was a gentle man of open spirituality who stood at Hadley, look upward to the

See Visor, p. 7

SKY FISHING AT PACHECO

Mark Wagner

Several observers from TAC and the SJAA tried El Rancho de San Luis Gonzaga (a.k.a. Pacheco State Park) Saturday, October 4, 1997. The site is a new state park, bequeathed to the people of California and funded by the generosity of the last owner of the land.

The location is somewhat prone to wind, but according to the park Ranger, wind season end (officially) October 1. The drive to Pacheco is an easier one than to Fremont Peak, albeit slower for those who like to combine road racing with astronomy, since portions of the highway get down to two lanes and attract semi traffic.

Still, most who went agreed, it is a shorter drive time-wise, notwithstanding the need for patience when one is behind slower traffic.

Our star party consisted of Alan Nelms, Russ Chmela, Bruce Jensen, Jack Zeiders, Leonard Trameil, Jim Bartolini, Garret from Holland and his friend John Gibson, and me. A nice size group with a good variety of equipment.

The horizons at Pacheco are very nice. As twilight faded into night, I found myself enjoying a spectacular view of a 3 day old moon with nice earth shine, Venus up to its left, and close together Mars and Antares.

I can see why the ancient Arab observers named the heart of the scorpion Antares, translated as "rival of Mars". It would be easy to confuse the two. To the east, the earth's shadow rose as a dark line. Overhead, Vega and Deneb popped out, and soon, the sky was filling with our neighbors in the Milky Way.

The light domes from the population centers are considerably muted compared to Fremont Peak and other closer-to-town sites I've observed from. Still, this night was bright compared to my other time at Pacheco. Fortunately the transparency was quite good.

Alan and I poked around at some of the big bright easies for a while, waiting for darkness to complete. Views of M51, M22, M13, M15, M2 were good with the exception of M51, which showed spiral arms with no structure, since it was already down in the dirt.

Once dark, we put out our "gone fishin" sign, and began working the remaining Herschel objects on our list in Pisces. What a constellation! Although Pisces lacks bright stars, making hoping at times challenging, there is soooooo much to see in this section of sky! All in all, we logged 48 galaxies, several in clusters.

It was nice to use Alan's laptop computer running The Sky with the Hubble Guide Star Catalog. The amount of detail possible in identifying star patterns, makes it possible to have positive identification of many objects that would be otherwise impossible, especially when dealing with galaxy clusters.

The computer is a great tool.

During the evening, three groupings of galaxies were particularly memorable. If these Pisces targets were fish, each would have been a stringer full of tasty beauties, all obtained with a sufficient fight to make the contest interesting.

The first was a grouping of NGCs 200, 203, 204, 193 and 186 (I'm sure there were one or two others in the group, but my notes do not show it)... there must have been 6 galaxies glowing faintly behind the foreground stars. The next cluster was associated with our search for NGC 379. Once there, we confirmed the positions of 393, 382, 386, 384, 385, 386, 374 399 and 403. I'm sure there was one more in the group that my notes do not detail.... so imagine, walking across eleven galaxies in roughly one degree of sky. What a spectacular piece of the universe!

One thing that surprised me about that grouping was Jack Zeiders. Sitting back by his scope, he heard Alan and I discussing the prospects of hunting this group of galaxies. Jack said "oh.... you're looking for" so and so.... and he was right on the money.

I began chuckling... just when I begin feeling like I'm becoming an accomplished observer, there's someone there to remind me how much I have to learn. Jack began calling the group by their Arp designation.



See Sky Fishing, p. 3

Sky Fishing, from p. 2

When I viewed it, I was reminded of last year at Mt. Lassen, when Zeiders showed the same group to me in his 17" dob. If you can, check out this group... it is a very nice chain of galaxies.

A few other groups included NGCs 495, 499, 501, 483, 507 and 517, and lastly, NGC7556, 7546, 7532 and 7534.

While searching Hershel's can be tedious, with many appearing as small, nondescript smudges alone in the field of view, it is too cool when one runs into an entire school of fish like we did last Saturday.

Along with the Hershel hunt, we all enjoyed sharing observing stories and looking through each others telescopes. One particularly nice view was through a 6" Astrophysics, pointed at 52 Cygni. An OIII filter brought out a wealth of detail on the wider side of the Veil Nebula... in fact, to me the Nebula seemed to break out into three branches at that location.

I was also enjoying, when the seeing would steady, outstanding views of Saturn. Cassini's was no challenge... there were pinpoint images of four moons, one very small and dim and really showing what an AP can do. Awesome.

Part of the evening, those parts where I was not glued to my eyepiece, I would kick back and enjoy the wide vistas the old Rancho Gonzaga provided. The horizons are simply the best I have seen at any of the bay area observing sites I have tried... so much so that it is really enjoyable to stroll around a bit, look at the low line of hills surrounding the area at a distance, and just take it all in.

By 2:30, clouds began forming in the west. At first there were just a few, then began increasing. Alan, Bruce and Jim took off. I was looking at Orion (naked eye and in the scope), and realized a cloud was covering the area between the Hunters legs. It looked like an enormous nebula.

Jack was tearing down, Bruce was in dreamland, and Russ was thinking of a short nap, so I climbed into the back of my truck for the night.

I awoke alone in the park Sunday morning. I was a beautiful sunny day. Ranger Dooley came by and we talked for a while about Fremont Peak and Pacheco, how they compared. Some equestrians began showing up. I sat back and poured some still hot coffee, and enjoyed watching people getting ready for their hobby, brushing the horses, joking and enjoying themselves.

I had a great night. I plan to spend more time at Pacheco, and plan to still visit the Peak regularly too.

Editors note: Pacheco State Park encourages astronomy use, but night access must be prearranged with Ranger Dooley at 209 826-6283. Mark Wagner is a former director and current friend and supporter of SJAA.



PEAK HERSCHELL TIME

Jay Freeman

During the first dark of the moon after the 1997 autumnal equinox, in late September and early October, I had three good observing nights at Fremont Peak State Park, near San Juan Bautista, California.

Each time I took my Intes 6-inch f/10 Maksutov. My main observing program continued to be chasing down the last remaining of the 2500 or so deep-sky objects discovered by William Herschel, that I have not already seen. I logged about 120 during those three nights — I have not quite 400 to go.

Six inches of aperture makes a Herschel hunt very challenging, but with practice, good technique, and dark sky, almost all are detectable with no more than a little bit of magic.

I have been working mostly with exit pupils of 1.5 or 1.6 mm — magnifications of 90 to 100x, a lot more than many people use for deep-sky work with so small a telescope. But they work fine, and push the telescope's limiting magnitude, for galaxies at least, a good deal beyond what I can do with lower magnification.

There is a side benefit, too — with that much magnification, observations are less sensitive to background sky glow — I have done a little of the work with as much as a four- or five-day moon in the sky. The problem then becomes one of shielding my eyes from background



See Herschel, p. 4

Herschel, from p. 3

glow that does not come through the eyepiece.

I have been using my pirate's eye patch (Arrrrr!!!), and assorted contortions of hands and distortions of hat and of jacket collar, to ward off the light.

The most common problem is not that objects are too faint, but that faint objects are too close together to detect as separate. NGC 1633 and 1634, in Taurus, are an example of such a pair that I found just barely separable in the six-inch. They are about an arc minute apart, and both have magnitudes of 13 or 14. (Your mileage on magnitude may vary, depending whose numbers you use.)

Now and then I take a break and look at other things. On the evening of 4 October, another observer was using a Pronto to chase down some faint nebulae, and wondered whether I could see IC 2118, the Witch Head Nebula, with the Intes.

This several-degree long sprawling nebula in eastern Eridanus is really too large for comfortable viewing with that telescope, but I tried. With my 32 mm Erfle eyepiece (two-inch barrel) and no filter, we swept from beta to lambda Eridani, and found a glowing patch about half way between the two. That was encouraging, so I put in an Orion Ultrablock filter. The patch was more prominent, and we could also see another patch, about half way from the first one to psi Eridani.

A good view of this object would require a rich-field telescope with a much larger field. Nonetheless, I was pleased that the Intes was doing so well.

Yet the most wonderful astronomical sight of that dark moon was

not a deep sky object at all, it was the spectacular pass of Mir and space shuttle Atlantis on Friday evening. I observed this one from my home in Palo Alto.

Atlantis was slightly the brighter of the two, almost a dazzling white as her flat trajectory arced up from the horizon and past Jupiter, with Mir in close pursuit behind, as I watched naked-eye and with a 10x50 binocular.

AUTOMATING A DAVID MALIN ASTROPHOTOGRAPHY TECHNIQUE

by Ernie Piini

I was very impressed when I first saw some step-focus photographs of stars by David Malin, a world renowned astrophotographer from Sydney, Australia. This is a new twist to star trail photography which reveals the true colors of the stars.

With ordinary star trail photography, many stars are just too bright to reveal their colors. The images are burned out and appear white. Malin's technique involves changing the focus of a camera lens by a predetermined amount following short periods of exposure during a star trail photograph.

His illustrated technique which I read in the *Quantas AIRWAYS* magazine (March/April 1986), while returning home from a trip to Ayers Rock to view Halley's Comet, was an eye opener. My first reaction was that it would be lots of fun to try and duplicate.

My first attempt was under fairly dark skies at Pebble Beach. The

winter constellations graced the heavens at that time and one of the best targets was of course, the fabulous Orion constellation. I used a Pentax 35-mm camera loaded with Extachrome-200 slide film as starters. I experimented with 50mm and 135mm lenses.

My lens was initially set at infinity (sharpest image) and the field of stars so positioned as to remain in the field of view after a 21-minute exposure. My 135mm lens, for example, has marked focus settings of: infinity, 100, 50, 30, 20, 15, 12, 10, 9, 8, 7, and 6-feet.

I defocused the lens downward, a mark at a time, after every 3-minutes of exposure, (at f/2.8) seven times (ending with the 12-foot mark) making the total exposure lasting 21-minutes.

The initial results were colorful and pleasing but with many disappointing errors. For instance, timing each 3-minute sequence and changing the lens focus setting in the dark provides a perfect opportunity for Murphy's Law to creep in.

At times I forgot which way to rotate the focus ring, I found it difficult to read the focus marks in the dark, I forgot to reset my time clock, I bumped or moved my camera while defocusing, and forgot to release my shutter at the end of my exposure run. These gremlins got worse as the night progressed! There must be a better way...

Being a former electronic engineer and having a passion for developing mechanical gimmicks, I decided to investigate a way to do the David Malin thing in a more automated way. Why not build something that would allow me to

See Astrophotography, p. 5

Astrophotography, from p. 4

program the sequence, press the START button, go have coffee, and come back later, and set up for the next photo.

And WOW - did I have fun!

My Automated Step-Focus Photography project took on several design changes before arriving at a suitable solution. (Typical engineering.)

I began with a platform which resembles the good ole' slide rule; the sliding piece of wood, lined with a narrow strip of rubber matting, rotates the lens in the correct direction. The slide is driven by a 1/4-20 threaded screw which is in turn driven by a 12-volt DC motor. Limit switches are arranged at both ends to control slide travel.

This provides a basic starting point (sets lens focus ring to infinity) and an end point (tells electronics when to stop). The time intervals between focus changes (which determine the length of the star trail between focus changes) and the length of time for the DC motor to rotate (which determine the size of the star trail step-width) are programmed into the control box.

The camera's shutter release cable is attached to a specially designed releasing mechanism located near the end of the slide rule travel. To begin an exposure, the shutter release cable is depressed and locked in the "Bulb" exposure mode. When the slide reaches a predetermined point, an aluminum arm pushes on a swivel plate which in turn causes the release cable to trip and end the exposure. Works great. The predetermined release point is adjustable on the "slide-rule" arm.

The electronics consists mainly of a dual 556 Timer chip, a 393 (divide by 256) chip, a 4069 inverter chip, and a IRF-9Z30 FET switch. One-half of the 556 Timer is used to establish the basic clock pulses to the 393 divider chip. This divides the incoming clock pulses by 256 which puts out a pulse after every 256th count. A rotary switch selects the appropriate timing resistor to the 556 Timer chip which adjusts the interval between step-focus changes. The interval selections I use are 0.5, 1, 2, 3, 4, and 5-minutes. The output of the 393 divider chip is sent through a 4069 inverter chip before going to the second half of the 556 Timer chip. This logic circuit allows blanking out undesirable transient noises from the DC motor start up which will disturb the dividing action of the 393, and also undesirable transients from the clock "ON" switch. The second half of the 556 Timer chip is used as a "one-shot" and puts out a pulse width commensurate with the length of time to keep the DC motor turning. This pulse width length is determined by another rotary switch labeled Step-Width Select. I selected timing resistor values for 4, 5, 6, 7, and 8-second motor drive durations. The FET switch is a p-channel field effect transistor ideal for delivering the necessary drive power to the DC motor.

Once a step-focus sequence of exposures are completed, a reversing slide switch is activated to reverse the motor drive and return the slide and lens focus setting to the normal starting position.

Suitable step-focus profiles can now be set with selected combinations of the two rotary switch settings and adjusting the cable release mechanism positioning.

To capture the beauty of the entire constellation of Orion requires

a 50mm lens, whereas, the "Belt" portion with the Great Nebula of Orion is best photographed using a 135mm lens. I also found the 135mm lens is best used on single or bright objects like the star, Sirius or Vega. The longest possible length of a step-focus exposure depends on the sky fog limit which can degrade the richness of a star color if made too long.

An inherent fault in the optical construction of a lens shows up when step-focusing on stars away from the center of the field. The images tend to move out and away from a straight line, becoming more pronounced the further away from center.

The "slide-rule" mechanism attaches to my tripod with the standard 1/4-20 camera screw. I used a 9-pin "D" connector to detach the "slide-rule" cable with the Electronic Control Box. This simplifies handling and to make improvements during the design effort.

I use two 6-volt DC batteries connected in series. The 6-volt connection powers the electronic box and the total 12-volt connection powers the DC motor.

There are probably different and better ways to do the same thing but my intentions were to utilize available components and knowledge.

I have taken my step-focus machine to various dark-sky sites including Fremont Peak, Mt. Hamilton, Pebble Beach and Chew's Ridge in California and to Stellafane in Vermont.

I am very happy and proud of my results. I'd like to tell David Malin to quit wasting his time changing focus ring settings on his camera, and instead use my machine and come have coffee with me.

THE SHALLOW SKY

David North

On November first, the moon is basically new. Of course, this means the lunar and calendar months are very close, so keeping track of phases will be a fairly simple matter. The best night libration of the western limb takes place on the fourth, which is really about as bad as it gets; not only will there be no light on that limb, it means Mare Crisium will be very near the edge of the moon, and the eastern seas will be at their worst. The corresponding eastern libration on the 18th will also be poor, though the days just before full moon should allow good views of those same seas.

There is a bonus, however. For those of you prone to hunt "edge on" craters (where you can see the structure of the walls) the northern polar region will be very well placed at full moon, which is the best time to do this kind of observation (and a few days before and after... so the max libration on the 16th could be spectacular, as there are several excellent targets in this area).

Though first quarter viewing is still near it's nadir (at its worst last month), this is compensated for by the excellent third quarter opportunities for those who stay up late enough (or rise early enough).

As November starts, Jupiter, Uranus and Neptune are almost ideally placed for the early evening observer. This situation won't last long, so when you get a chance to view the monster planet and nearby friends, now is the time to take it.

On the other hand, Saturn is coming along nicely for the more

patient observer, and without Daylight Squandering Time, dark hours are getting longer. So if El Nino lays off a little, you'll have some great evenings with the most beautiful of planets.

Mars and Venus are pretty much gone, but can be seen near the horizon just after the sun sets and even followed for a while. In fact, the only planet not actually visible at sunset right now is Mercury, so those who haven't done a planet hunt might find the early month still rewarding.

Two meteor showers make their appearance in November. First are the Taurids. These are slow, bright meteors visible during October and November. This shower has two radiant of nearly equal activity 10 degrees apart. The southern radiant reaches it's maximum activity during the first week of November, while the northern radiant peaks one week later. Rates as high as 10 meteors per hour have been reported in early November, but on average the two radiants produce half that rate. The Taurids are produced by debris from Comet Encke.

Next, the Leonids are a shower of short duration, lasting only one week centered on November 17/18. The Leonids are particles from Comet Temple-Tuttle, which will reach perihelion in 1998. For approximately 10 years centered on the perihelion passage of Temple-Tuttle, the Leonids can produce marvelous displays of celestial fireworks. We are now within this period of enhanced activity, so don't miss it if the weather allows.

IN MEMORY

* BOB KELLER *

Bob Keller, a member of the San Jose Astronomical Association, died September 13, ending a five-year fight with prostate cancer.

By profession a Chemistry teacher for 36 years, Bob was busy with astronomy and photography, as well as sketching, carpentry, bird-watching, ham radio and numerous other hobbies. Bob's photos documented the work of Group 70, the Large Amateur Telescope project, as well as SJAA's events.

Bob had been voted the A.B. Gregory award, but he was not able to attend a meeting to receive it. The plaque will be given to his family.

Surviving are his wife Virginia, 11 children, and 9 grandchildren. Memorial gifts may be made to your local chapter of the American Cancer Society.



Submit

Members are encouraged to submit articles for publication in the *SJAA Ephemeris*. Send articles to Dave North via e-mail to Timocharis@aol.com. Articles received by the tenth will be put in the following month's newsletter. Please include your name and phone number.

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grandeur overhead, and wrote about his experiences in a candid and unabashedly spiritual book named "To Rule the Night," whose title was taken from Genesis: "And God created two great lights, the greater light to rule the day, and the lesser light to rule the Night."

At the exhibit I was most thankful that the public moved about in hushed silence and that there were no ushers urging us along. When I first saw Jim's suit, bathed in soft light in the glass case, I was overcome with strong emotion while kneeling to get a closer look at its many details. I am well-acquainted with the design of the Apollo suits, but there was still something unexpectedly awe-inspiring about the object that stood before me.

For me, the suit had a powerful presence of its own.

The visor had several tabs along its perimeter which Jim used to lift the various protective layers that shielded his eyes from the harsh lunar sun and its glare at Hadley. The outside visor had a wonderful gold/copper patina which made it look all the more mystical, and I could imagine Jim lifting the tabs with his thick glove, as he bounced about on the lunar rover.

Interestingly enough, this was the first mission to take the rover to the surface of the moon. The Smithsonian exhibit, coincidentally, had both an actual rover and an Apollo command module, but those were cold and impersonal metal artifacts by comparison, with none of the magical presence of Jim's suit, which stood before me in dramatic, poignant silence.

The fabric of the suit, once a pristine white, was now dirty and soiled in places, due, no doubt, to remaining traces of lunar dust. On the left breast was one lone dramatic word, emblazoned in bold capital letters: IRWIN. For me that one name exemplifies the magic and thrill of Apollo, and Jim Irwin was and is for me, the most admired of our astronauts.

In front of the suit were the various tubes which brought life-sustaining oxygen to Jim while he traversed the plain and steered the rover to the very edge of the giant, dried gorge that is Hadley Rille[believed by many to be a collapsed lava tube], 48 miles long, 1.5 miles wide and .5 miles deep. The tubes fed into various highly-polished red and blue connectors that prevented leakage of vital gases into the deadly lunar vacuum.

As I looked in silence at the suit, my mind was once again there with him at Hadley, enriched by the many still and movie images that are now part of our collective national consciousness.

I found the suit's gloves and shoes particularly striking; it was with these thick, clumsy gloves that Jim picked up lunar rocks that gave us new insights into the formation of the Universe.

The lunar overshoes protected his feet from the harsh lunar temperature fluctuations from +214 to -250 F. On the edges and soles of the boots were the treads which left human footprints on the moon and which, if undisturbed, will last several million years.

As I looked around the back of the suit, I was fascinated by the PLSS (Portable Life Support System), the unit which kept Jim alive for those hours on the moon. I reflected on the insights and ingenuity of the thousands of people from Aristarchus to the un-named technicians who sewed his hand-made suit, and how all this knowledge and skill came together in this object in front of me.

Technology has terms for describing the many parts of the suit: oxygen purge system, thermal meteoroid garment, PGA pressure transducer, LCG inlet temperature sensor, biomedical injection access, beta glass fiber, OPS actuator, etc. But beyond all of the scientific jargon was the fact that a fellow human was actually inside of the suit before me and who for precious hours walked over soil where no human had ever been - a region without human contact for 4,000,000,000 years - and who was, more importantly, a man who dared to take time to look up, reflect on the majesty and mystery of the Universe, and write about his reflections.

For me, the suit was the embodiment of Jim's voyage to the cosmos. Jim died in 1991, but his legacy lives on in each of us who wonder and reflect at the magnificence of the night sky each evening through our telescopes.

COMET COMMENTS

Don Machholz

A new comet has been visually discovered. It can be seen in most telescopes for the next few months. Meanwhile, Comet Hale-Bopp dims as it moves south in the morning sky. Comet Meunier-Dupouy, up to a magnitude fainter than suggested in the ephemeris below, remains in our northern evening sky. Periodic Comet Hartley 2 has returned on its 6.4-year orbit. Finally, our monthly report on daylight comet discoveries shows five more short-lived faint comets being found on images obtained by the SOHO satellite, bringing its total to 30.

The newly-discovered comet is C/1997 T1 (Utsunomiya). It was found on Oct. 4 by Syogo Utsunomiya of Japan who was using 6" binoculars at 25 power. The comet was quite far north (+72 degrees declination) and showed a short tail. An early orbit indicates that the comet reaches perihelion in early December when it will be outside our orbit and a bit behind us.

A second and much fainter comet was discovered on Oct. 5 by a team of professional observers using a CCD attached to a telescope at the European Southern Observatory. Found at magnitude 19 it appeared as an asteroid: a single slow-moving point of light. But closer examination has showed a tiny tail. It is possibly a short-period comet staying at least 3 astronomical units from the sun. It is known as P/1997 T3 and will remain faint.

COMET HUNTING NOTES: Since the first day of 1975, 76 comets have been visually discovered. Some have been discovered by more than one person: ten by two visual discoverers and seven by three. This amounts to 100 visual discovery events. Thirty-two of those 76 comets were found in the evening sky with 44 found in the morning sky. Additionally, 42 were found in the north of the celestial equator with 34 found south. All of the 23 comets found by observers living south of the equator were found the southern celestial sky. Northern Hemisphere observers found comets both north and south of the equator.

Orbital Elements

Object:	Hale-Bopp	Meunier-Dupouy	Hartley 2	Utsunomiya
Peri. Date:	1997 04 01.13800	1998 03 10.4346	1997 12 22.02418	1997 12 10.836
Peri. Dist (AU):	0.9141405 AU	3.050393 AU	1.0317245 AU	1.34933 AU
Arg/Peri (2000):	130.58915 deg.	122.6927 deg.	180.72400 deg.	096.950 deg.
Asc. Node (2000):	282.47069 deg.	148.8384 deg.	219.95471 deg.	053.942 deg.
Incl (2000):	089.42943 deg.	091.2715 deg.	013.61908 deg.	128.182 deg.
Eccen:	0.9951172	1.001491	0.7003913	1.0
Orbital Period:	~2500 years	Long Period	6.39 years	Long Period(?)
Ref:	MPC 29568	MPC 30429	MPC 29880	IAU 6753
Epoch:	1997 06 01	1998 03 08	1997 12 18	1997 10 06
Absol. Mag/ ⁷ n ¹² :	-1.0/4.0	3.0/4.0	8.5/8.0	7.8/4.0

Ephemerides (for 00UT)

C/1995 O1 (Hale-Bopp)

Date	R.A. (2000)	Dec	El	Sky	Mag
11-03	08h04.9m	-51°07'	83°	M	6.7
11-08	08h01.2m	-53°00'	84°	M	6.8
11-13	07h56.4m	-54°48'	86°	M	6.9
11-18	07h50.5m	-56°29'	87°	M	7.0
11-23	07h43.4m	-58°04'	89°	M	7.1
11-28	07h35.0m	-59°30'	90°	M	7.2
12-03	07h25.5m	-60°46'	91°	M	7.3
12-08	07h14.9m	-61°52'	91°	M	7.4
12-13	07h03.3m	-62°47'	92°	M	7.5

C/1997 J2 (Meunier-Dupouy)

Date	R.A. (2000)	Dec	El	Sky	Mag
10-09	15h23.8m	+59°24'	72°	E	11.1
10-14	15h39.5m	+58°30'	73°	E	11.0
10-19	15h55.2m	+57°33'	73°	E	11.0
10-24	16h10.9m	+56°33'	74°	E	10.9
10-29	16h26.5m	+55°30'	74°	E	10.9
11-03	16h42.0m	+54°25'	75°	E	10.8
11-08	16h57.2m	+53°17'	75°	E	10.8
11-13	17h12.3m	+52°08'	75°	E	10.8
11-18	17h27.0m	+50°57'	74°	E	10.7
11-23	17h41.5m	+49°45'	74°	E	10.7
11-28	17h55.6m	+48°33'	73°	E	10.7
12-03	18h09.4m	+47°21'	73°	E	10.7
12-08	18h22.9m	+46°10'	71°	E	10.7
12-13	18h35.9m	+45°00'	70°	E	10.6

103P/Hartley 2

Date	R.A. (2000)	Dec	El	Sky	Mag
11-03	19h42.5m	-08°04'	76°	E	10.4
11-08	19h55.5m	-08°29'	74°	E	10.1
11-13	20h09.7m	-08°51'	72°	E	9.8
11-18	20h25.0m	-09°08'	71°	E	9.5
11-23	20h41.5m	-09°20'	70°	E	9.3
11-28	20h59.2m	-09°27'	69°	E	9.1
12-03	21h18.1m	-09°29'	68°	E	8.9
12-08	21h38.2m	-09°25'	68°	E	8.7
12-13	21h59.4m	-09°14'	68°	E	8.5

C/1997 T1 (Utsunomiya)

Date	R.A. (2000)	Dec	El	Sky	Mag
11-03	19h01.2m	+34°24'	81°	E	9.9
11-08	18h55.5m	+29°19'	74°	E	10.0
11-13	18h51.7m	+25°00'	68°	E	10.1
11-18	18h49.2m	+21°19'	63°	E	10.2
11-23	18h47.7m	+18°09'	57°	E	10.3
11-28	18h46.7m	+15°26'	52°	E	10.3
12-03	18h46.3m	+13°05'	47°	E	10.4
12-08	18h46.2m	+11°01'	43°	E	10.5
12-13	18h46.3m	+09°11'	39°	E	10.6

CELESTIAL CALENDAR SEPTEMBER 1997

Richard Stanton

Lunar

Phases	Time	Date	Rise	Trans	Set
FQ	13:43 PST	07	12:49	18:18	23:52
FM	06:12 PST	14	17:37	00:40	06:41
LQ	15:58 PST	21	23:56	05:51	12:35
NM	18:14 PST	29	06:26	11:47	17:05

Mercury 1.22 A.U. Mag. -2.0

Date	Rise	Trans	Set	R.A.	Dec.
07	07:58	12:50	17:42	15:47.4	-21:39
17	08:32	13:12	17:52	16:48.7	-24:49
27	08:52	13:28	18:04	17:44.9	-25:50

Venus 0.58 A.U. Mag. -5.5

Date	Rise	Trans	Set	R.A.	Dec.
07	10:39	15:11	19:42	18:09.0	-27:00
17	10:40	15:14	19:47	18:51.7	-26:29
27	10:32	15:11	19:51	19:29.3	-25:05

Mars 1.98 A.U. Mag. +0.8

Date	Rise	Trans	Set	R.A.	Dec.
07	10:14	14:55	19:35	17:53.9	-24:40
17	10:08	14:49	19:30	18:27.0	-24:33
27	09:59	14:43	19:26	19:00.5	-23:58

Jupiter 5.11 A.U. Mag. -2.3

Date	Rise	Trans	Set	R.A.	Dec.
07	12:58	18:04	23:10	21:05.4	-17:38
17	12:22	17:29	22:37	21:09.7	-17:18
27	11:46	16:55	22:04	21:15.1	-16:53

Saturn 8.60 A.U. Mag. +0.7

Date	Rise	Trans	Set	R.A.	Dec.
07	15:43	21:57	04:14	00:59.0	+03:21
17	15:02	21:15	03:32	00:56.9	+03:09
27	14:22	20:34	02:51	00:55.3	+03:02

SOL Star Type G2V Intelligent Life in System?

(HOD = Hours of Darkness)

HOD	Dt	Rise	Trans	Set	R.A.	Dec.
10:38	07	06:39	11:51	17:04	14:50.1	-16:20
10:54	17	06:50	11:53	16:56	15:30.7	-19:01
11:06	27	07:00	11:55	16:51	16:12.8	-21:09

Astronomical Twilight	Begin	End
JD 2,450, 759	07 05:10	18:32
769	17 05:19	18:26
779	27 05:28	18:22

Siderealtime

Transit Right	07	00:00 = 02:58
Ascension at	17	00:00 = 03:38
Local Midnite	27	00:00 = 04:17

Darkest Saturday Night 29-Nov-97

Sunset	16:50
Twilight End	18:20
Moon Set	17:04
Dawn Begin	05:30

ACTIVITIES THROUGH OTHER CLUBS

TAC has reserved the Montebello site for every Wednesday, more or less indefinitely (weather permitting); in that respect it is unique in the astronomical community. To get there, take Page Mill Road off 280 (or get to it via El Monte Road) until you're near the top. Montebello's sign will be easily visible on the left.

November

- 1 HVAC Starparty at Grant Ranch.
- 7 TAC Van Meter School public night.
- 8 TAC FP or Henry Coe lunar observing.
- 14 PAS General Meeting: Stardust Mission! with Dr. Scott Sandford of NASA discussing missions to comets.
- 29 HVAC Starparty at Grant Ranch.

December

- 5 TAC Fisher Middle School public night.
- 6 TAC FP or Henry Coe lunar observing.
- 27 HVAC Starparty at Grant Ranch.

DIRECTIONS TO SJAA PLACES

Houge Park is in San Jose, near Campbell and Los Gatos.

From Hwy.17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy.85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

Henry Coe State Park is east of Morgan Hill.

From Hwy.101, exit onto East Dunne Avenue. Continue for 12 miles, far past Andersen Reservoir, to the park, atop the ridge. The current SJAA site is the parking lot on the right about 1/2 mile before the main entrance. There is now a fee for use.

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

From Hwy.101, about 11 miles south of Gilroy, take the eastbound Hwy.156 exit. Run for 3.0 miles, to a traffic light, and turn right onto county Hwy.G-1. Follow G-1 for 12 miles into the park. Be careful to note the sudden "left/right jog" soon after the turn; signs are posted. There is a \$3 entrance fee.

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

To Subscribe to/Unsubscribe from the SJAA Mailing List send mail to sjaa-request@seds.org with a blank subject line followed by a single text line that says "subscribe" or "unsubscribe"

SEPTEMBER'S BOARD MEETING

Duh Editor

We had an unusually chatty start September 13, as there was no quorum until 7:05, when the meeting finally began. Secretary Jim Van Nuland was not on hand, so I scribbled down the official notes, since I had a pen and paper.

Paul Mancuso, Ed Erbeck, and Bill O'Shaughnessy were also absent.

The 1998 calendar was amended to reflect some date changes due to holidays, but has not been officially finalized yet, pending some further discussion.

A list of known school star party dates was presented, which will be printed as a sidebar.

The Treasury Report indicated continued sound financial footing, but it is to be noted that we lost a net of nine members in the last two months.

The old and new bylaws were discussed, and there does not seem to be much in the way of controversy

surrounding any suggested changes. It was agreed all around that any changes that are made will be presented to the membership before passage, and will be voted on by the membership.

Bob Brauer, the only remaining member of the site committee, has recently acquired a truck, so he will be able to pursue investigation of various possible SJAA sites for further development and use.

It was suggested that we might have door prizes at the meetings, an idea everyone seemed to like. Loonie Ed Erbeck previously indicated he had some good ideas for stuff that might make neat prizes.

Next year's Beginning Astronomy Class may follow a different format. With the success of Jack Zeider's "Guest Star" approach this year, it was suggested that each class be taught by a different volunteer each month, including such specialties as Lunar Observation, Planetary, Astrophotography, etc... along with the description of the part of the sky best seen during that month (the constellation review). Some of the excellent slides used for the latter part of the program were lost, and Jack is planning to replace them as soon as possible.

Elections are in February, and it was noted that it's time to start getting candidates for the various board positions.

At that point we all drifted off to sleep, only to be awakened by members showing up for Slide & Equipment night...



SCHOOL STAR PARTIES

These are the known dates of coming SJAA school star parties. If you are interested in attending and getting in on an opportunity to bring the stars to kids who really enjoy it, contact Jim Van Nuland for details.

November

4 Dove Hill Elementary

December

4 Blue Hills Elementary

January

9 Bernal Intermediate

16 Milpitas Civic

February

6 Houge Park (school attendance has been arranged)

CHABOT AUCTION RESULTS

Denni Medlock

Figures are in: Approximately \$18,000 was raised, 20% of which goes to the Telescope Makers Workshop at Chabot, which plans to use it to buy grit and mirror blanks for those who can't normally afford those goodies.

(Since the workshop is the closest thing to an anarchy I know, with no structure or membership dues, this type of funding is a miracle.) Many thanks to all who attended, and for those of you who didn't - you missed a good one.

But don't be surprised to find a lot of this stuff recycling through the SJAA

Auction and RTMC next year. I think Joe Sunseri single-handedly supported the auction....

KEN CROSWELL AT NOVEMBER MEETING

Planet Quest is the name of Dr. Croswell's latest book, described in *Nature* as "a thrilling account of the discovery of planets in the solar system and elsewhere that stands out for its human interest and its accuracy."

An astronomer from Berkeley, Ken will give us the lowdown on the hunt for planets both in the past and the future.

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Telescope Loaner Program

Mike Koop 446-0310

Web Page

Bill Arnett billa@znet.com
Scott Wade



Telescope Loaner Program Status

Mike Koop

No.	Scope Description	Borrower	Due Date
1	4.5" Newt/ P Mount	Mark Cousins	11/24/97
2	6" f9 Dob	John Paul De Silva	?
3	4" Quantum S/C	David Manley	12/1/97
4	60mm Refractor	Del Johnson	Indefinite
6	8" Celestron S/C	Bob Bootz	11/13/97
7	12.5" Dobson	Nick Tucci	11/11/97
8	14" Dobson	Bryan Zaring	10/1/97 Note 1
9	C-11 Compustar	Paul Barton	Indefinite
15	8" Dobson	Available	
16	Solar Scope	Jack Peterson	Indefinite
18	8" Newt/ P Mount	Cecelia Yarnell	11/18/97
19	6" Newt/P Mount	Madhava Kidambi	10/15/97
21	10" Dobson	Nathan Hill	11/9/97
23	6" Newt/ P Mount	Bob Hess	10/31/97
24	60mm Refractor	Ravi Tembhekar	11/31/97
26	11" Dobson	Steve Sergeant	12/4/97
27	13" Dobson	Dean Sala	12/1/97
28	13" Dobson	Ramin Ghafouri	10/9/97
29	C8, Astrophotography	Scott Wade	8/28/97 Note 1
30	7" f/9 Newt/Pipe Mount	Available	

Note 1: Please call us and tell us how it's going.

Waiting List:

No. 6	8" Celestron S/C	Ravi Tembhekar
No. 8	14" Dobson	Steve Sergeant
No. 29	C8, Astrophotography	Dean Sala

All scopes are available to any SJAA member. To reserve a scope, please contact Mike Koop at (408) 473-6315 or email at koopm@best.com.

ASTRO ADS

Orion Telescope & Binocular Center in Cupertino is seeking temporary part time help during the Christmas season, starting immediately and running through the end of the year. This position may continue beyond the season as conditions warrant. Contact Glen Peters at 408-255-8770 or go by the store at 10555 South De Anza Boulevard. Must work weekends.

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San Jose Astronomical Association Membership Form

New ___ Renewal ___

Membership - \$15

Junior (younger than 18 years old) - \$6

Sky and Telescope - add \$27 to membership

(Sky & Tel will not accept multiyear subscriptions)

Make checks payable to "SJAA"

Bring this form to any SJAA Meeting
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