



# East Valley Astronomy Club

October

Newsletter

1996

## EVAC MEETING HIGHLIGHTS

Robert Kerwin opened the meeting at 7:30 pm. There were 63 persons present with 5 guests. Robert discussed upcoming events;

- Lunar Eclipse Sept 26
- Adopt-a-Highway Sept 28
- Kitt Peak Cookout and Star Party  
Contact Dean Ketelson (520-293-2855)
- All AZ Star party Oct 11-12
- November Club Elections
- An on call list for volunteers for working public school star parties. See Don Wrigley (982-2428).

Several members brought up the subject of reopening the Cave Creek site. It was decided that use of the site was okay, but to contact the EVAC party line - Robert Kerwin(837-3971).

Paul Dickson has for Astronomy Kit & Observing Guide for beginners. They are priced at \$15, normally they retail for \$25. Paul can be reached at 841-7044.

Seward Mirror Lab in Tucson will be holding an open house for the casting of the 8.4 meter mirror. Due to security precautions, details of the open house will be announced at the last moment. Paul Dickson will be providing more information as it comes available.

Tom Polakis had some slides he took during this monsoon season. There were many excellent cloud and lightning shots. One shot showed a large cloud to cloud bolt.

## FEATURED PRESENTATION

Dr. David Burstein, Astronomy Professor at ASU, was our featured speaker. Dr. Burstein is one of seven authors for Introductory College Textbook on astronomy, "21st Century Astronomy." It is due out Fall 1999. He is writing the section on Galaxies.

Dr. Burstein had the opportunity to at Princeton University during its 250th anniversary celebration.

He was there to take part in a conference having a "great" Cosmological debate. The COBE data was presented, showing how it corresponds to the radiation of a black-body. This graph has been made public, but this version included the error bars. At some points the error bars were  $\pm 50\%$ . This leaves a lot of room for interpretation, and it has been interpreted.

Hopefully, this confusion will be cleared up with COBRAS (U.S.) and SAMBA (European) missions. They are scheduled to be launched in 2002. With the launch of these two missions, we should be able to get answers to the "holy grail" of cosmology. We will be able to get the Present Hubble constant (the expansion of the universe) within  $\pm 1\%$ . Currently the best answers range from 57 to 80 kilometer/second/Megaparsec. We also should be able to get a better grasp of the Hubble constant in the past. With this information, we will be able to get answers for the Cosmological constant, mass and age of the Universe.

Dr. Burstein discussed the Evolution of Galaxies. The standard Hubble diagram is no longer believed to be correct. With the help from other astronomers a new diagram is being developed. It is 3 dimensional and is based on a galaxy's mass, luminosity and mass/luminosity. Although the diagram is in its infancy, it is hoped that this diagram will be equivalent to the Hertzsprung-Russell Diagram (for stars).

After a period of questions and answers, the meeting was over and socializing started.

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## OCTOBER'S GUEST SPEAKER

This month's guest speaker will be our own Sheri Cahn. She will be talking about accessing Space Telescope Science Institute network.

## EVAC CLUB NOMINATIONS

Nominations for club officers and board of directors will be held at October's meeting. Several positions are still vacant. Contact Robert Kerwin if you are interested in becoming an officer or director. EVAC needs your help.

**Remember the elections are in November.**

## The Phoenix Connection

by Sam Herchak

When amateur telescope makers (ATMs) look in magazines for sources of large mirrors, three companies usually pop up: Galaxy Optics, NOVA Optical Systems, and Pegasus Optics. Did you know one of these companies was founded in Phoenix by a former member of the Saguaro Astronomy Club?

I learned this from Bernie Sanden as we walked the rim of the Grand Canyon last June at the annual Grand Canyon Star Party. Having made a mirror myself and being hooked on "pushing glass," I quizzed Bernie at length. Turns out John Hall, founder and owner of Pegasus Optics, helped evaluate a mirror handed down by Bernie's Dad. Bernie recalled him being a terrific optician (but thought his telescope construction fell short). This all intrigued me so I decided to go to the source for more information.

John was born in Little Rock, AR, moved to El Paso, TX around his high school years, after which he joined the Air Force where he specialized in radio repair. Along the way, he picked up a few languages from overseas assignments; he speaks, reads and writes Spanish, Japanese, Chinese and German! Eventually he moved on to quality assurance with the Defense Logistics Agency and wound up in Phoenix in 1981. In a government newsletter, he was referred to as "Professor Hall." Besides his language skills, he was considered a computer expert and a fine optician. Founding Pegasus optics in 1989, John made about 300 mirrors by 1993.

In 1994, he took an early retirement buy-out option and decided to pursue mirror making full-time. In his search for a low cost area for semi-retirement, northwest Arkansas rated high on the list. He bought several acres with a modest house and some fruit trees. The next priority was to build a 35' x 40' two-level workshop, which his neighbors call a "very nice barn," as it's heated and air conditioned.

The mirror making process he uses is well researched

and meticulous, from start to finish. The blank is carefully prepared by the supplier, with the curve and bevel being pre-generated, then precision annealed to relieve all internal stress from the glass. Once it arrives in Huntsville, John works his magic with three machines of near meter capacity—the first for curve generation and coarse grinding, the second for polishing, and the third for figuring. Yes, he is actually able to figure the final paraboloid by machine, with constant attention and manipulation. Testing is done often, primarily with a Foucault tester. He also uses a null tester, but that's what produced the Hubble Space Telescope mirror....

The results of his precision process are hard to argue with—diffraction limited optics for any mirror over f/4.2 focal ratio. Faster f-ratios to f/3.7 are 1/4 wavefront. Surface accuracy is better than 1 millionth of an inch from the nominal parabolic surface. Guaranteed.

With one hired helper, Pegasus Optics now averages a completed mirror every three days. John has lost count but figures he's made close to 600 mirrors! For more information, you can find his address in the astronomical classifieds, or check out his web page at:

<http://www.icstars.com/pegasus>

## Public Star Party at Lost Dutchman Park

On October 4, members of EVAC have been invited for a public star party at the Lost Dutchman Park. St. Francis Xavier School has asked that we set up our telescopes for them. They are having a cookout, star party and camping. St. Francis will provide food for those that show up.

The park Rangers will allow you to enter the park for free. That is providing that you tell that you are with EVAC and leave after the star party. To get to the park, take US 60 to the Idaho Rd exit. This is also highway 88, head north. Signs will direct you to the Lost Dutchman Park. The rangers will show you where St Francis is camping out.

The star party is tentatively scheduled for 6:30 pm. Contact Don Wrigley at 982-2428 for the latest information. Don would like to know who all is coming.

## A Phoenician's View of Tucson Amateur Astronomy

by Tom Polakis

I was in Tucson playing in a New Mexico/Arizona ultimate frisbee tournament (the opposite hobby of amateur astronomy!) and made it down to their Empire Ranch site for a star party last Saturday. I thought you all might be interested in some notes I took on the

night, not necessarily astronomical.

The last time I'd been to Empire Ranch was 11 years ago, back when it was the annual All-Arizona Star Party site. It is located about 40 miles and 45 minutes southeast of Tucson, where the glow of Phoenix is conveniently masked behind the Tucson light dome. My Delorme Atlas indicates that the site's elevation is 5000 feet, which sounds about right, judging by the local flora of pleasant grassland punctuated by high desert mesquite trees and too-low temperatures.

What struck me as particularly depressing was the growth of the sky glow over Nogales and Sierra Vista/Fort Huachuca in the past decade. The latter is a bit brighter, extending about 20 degrees into the SSE sky. The glow of Nogales is just to the west of due south, but didn't interfere too much with an observation of IC 5148, a very faint planetary in southern Grus. My memory may be wrong, but I didn't notice an appreciable growth in the Tucson/Phoenix glows, perhaps due to enforcement of the lighting ordinances there. One unfortunate aspect that has not changed with the site is the 20-second duration of -12 magnitude headlights of every car headed northbound on Rte. 83. This entire discussion will become academic if the proposed copper mine goes up five miles to the south! Local Tucson amateurs are hoping for a major drop in copper prices that would make the whole venture economically unwise. I think this is their only hope.

When I asked about other sites that are, perhaps, a 1 1/2 hour drive away, the next stop appears to be the Chiracahuas, which are about 2 1/2 hours, and spectacularly dark. And the more hard-core Tucson amateurs occasionally make the four-hour commute to observe at 9000 feet on Mount Graham. All of this just sounds cold to me, and makes me long for February nights spent in the murkier low desert at Sentinel or Vekol (two and one hour drives, respectively). All in all, I don't think we have it that bad in Phoenix.

The star party at Empire Ranch was kind of like a Florence Junction or Buckeye event. Maybe due to the proximity to the city, nobody is all that "serious", and you get the feeling that there are those who are at more distant sites, unless they're at the UofA game. Everybody was checking out Comet Hale-Bopp, which looked quite good through a 16-inch Orion Dob. Some inner detail along with that familiar offset tail are brightening up nicely. I met up with Rick Blakely, who spent some time in EVAC, where he did some great talks about his work with optics. He knows the sky well also, and was entertaining some lay friends with a pair of 20x80mm binos. Rick is doing some work with Dean Koenig, the energetic owner of Tucson's newest scope shop, Starizona.

I spent the majority of time hanging around Tom

O'Hara, who shares my "universe view" almost identically - you can't beat looking with your own eyes, equipment is just a means to an end, etc, etc. Tom uses a 20-inch home-brew scope with Galaxy optics that he uses to view anything that's up. I got a great education about Saturn as viewed through a wide variety of filters. The seeing and optics were good enough to show Mimas emerging a few arcseconds from the glare of the rings. Quite a sight. Tom has been doing amateur astronomy for 30 years, since he was a teenager, and was quick to point out where Saturn was when he got started. He lamented the lack of serious observers in Tucson, but we agreed that many of them may be set up in observatories. Fortunately, he woke me up at 3 a.m. on three hours of quality truck sleep for a view of the newly discovered Comet Tabur. It is already approaching 7th magnitude, and shows a sharp jet of a tail about a half degree in length. It was conveniently situated midway between Bellatrix and Betelgeuse.

Overall, I think we in Phoenix should be pretty happy with our club and site situation. Although it takes about 70 miles of distance to reduce Nova Phoenicia to that of a 40-mile drive out of Tucson, we don't have to contend with border towns to the south or chilly Winter conditions. Yes, I'd love to have nighttime lows in the 70's in August and killer hiking a half hour away from town, but we've got it pretty good up here as well. After all, we could be living in L.A. (involuntary shudder).

## Reply to A Phoenician's View of Tucson Amateur Astronomy

By Dean Ketelsen

I won't argue with anything that Tom has to say about observing in the Tucson area, but a few additional comments are in order. The Empire Ranch site is a victim of growth of towns in the area, not only Sierra Vista and Nogales as Tom mentions, but also the entire Sonoita valley to the south has been sprouting "security" lights.

### UPCOMING EVENTS

- **Public Star Party, Oct. 4, Dusk**  
Lost Dutchman Park - Contact Don Wrigley
- **Local Star Party, Oct. 5, Sunset -6:06 pm**  
New Florence Junction site
- **EVAC Club Meeting, Oct. 9, 7:30 pm**  
SCC, Physical Science Bldg., Room 172
- **All Arizona Star Party, Oct. 11 and 12,**  
See article in newsletter
- **Local Star Party, Nov. 2, Sunset -5:34 pm**  
New Florence Junction site
- **Deep Sky Star Party, Nov. 9, Sunset -5:29 pm**  
Vekol Road site

I have only observed from there twice in the last 3 or 4 years, as like most of us, I have my own favorite sites. For those multi-day trips, Chiricahua National Monument (Massai Point) can't be beat with its 7000 foot altitude. Unfortunately, you can't camp outside the campground, so you need to break down the scope every night. As long as you are going to that trouble, Motel 6 in the sleepy ranching community of Willcox is only 35 miles away. "My" dark site is on a piece of state land 10 miles east of Arivaca called Rancho Seco. The glow from Tucson has to cross two mountain ranges and Phoenix is visible too, as well as Nogales to the SE. At 4000 feet though, the sky is spectacular and dark. It is a 60 mile drive from Tucson. For a quick getaway night to observe for a few hours on a week night, I like to use one of the old Titan II missile silos that the TAAA tried to buy back about 7 years ago. It is a quick 35 miles from town towards the SW. You lose the NE to Tucson, but the south, west and overhead is great for only a short drive.

As you may or may not know, the club is trying to obtain a site of its own. The one thing we have learned is that you can't please anybody! The search has gone on for 8 years or more and the only good thing is that we now have over \$30K in the bank. The search has narrowed towards the SW of Tucson where development seems minimal. Unfortunately also, there is little private land for sale and we are considering buying state land at public auction. Stay tuned, but don't hold your breath. By the way, the Rancho Seco site is one being considered, but the complications include mining claims held by someone and access over state and federal land...

Speaking of observatories, for those in the know for non-critical observing (meteors, socializing), the place to go is Ed Vega's observatory SE of Benson. He runs a B&B there with 3 bedrooms, a 20" Mak, 14" Newt, 11" and 6" refractors, etc. The great part about it is that there are FACILITIES there - bathrooms, warm/cool rooms, etc, etc. There are lots of direct lights from Benson to the west, but is the only observing site I know where they deliver pizza to you in the unlikely event the fridge is empty. To witness it for your self, try calling Ed at 747-9323.

## **Membership List as of September 29,1996**

**Alber, Manfred, Phoenix**

**Alvarez, Enrico, Fountain Hills**

**Anderson, Bob**

**Arthur, Norman, Scottsdale**

**Bates, Bob, Apache Junction**

**Behlow, Jeanette, Phoenix**

**Belcher, Jerry, Phoenix**

**Bell, Steve, Phoenix**

**Beraud, John, Mesa**

**Blaugh, Jim & Lynn, Tempe**

**Bogan, Dwight, Phoenix**

**Bowling, Bill, Phoenix**

**Brick, Bill, Gilbert**

**Brown, David, Scottsdale**

**Cahn, Sheri, Phoenix**

**Campbell, Betty, Yarnell**

**Carruthers, Walt, Scottsdale**

**Chmela, Russell, Chandler**

**Christensen, John, Tempe**

**Collette, Marcia, Phoenix**

**Currie, David, Chandler**

**D'Aoust, Kate, Mesa**

**Daly, John, Scottsdale**

**Dassele, Mike, Scottsdale**

**Davidson, Bob, Chandler**

**Dellinges, Bill, Apache Junction**

**DeVlieg, Cliff, Phoenix**

**Dickson, Paul, Phoenix**

**Dilbeck, Russell, Apache Junction**

**Durham, John, Mesa**

**Fabrizio, David, Phoenix**

**Farley, Don, Mesa**

**Gans, Richard, Tempe**

**Gifford, Steve, Gilbert**

**Goss, Joe, Apache Junction**

**Granados, Art, Chandler**

**Greiner, Bill, Scottsdale,**

**Harvey, Tom, , Scottsdale**

**Heckens, Ted, Mesa**  
**Herchak, Sam, Mesa, AZ**  
**Honer, Frank, Phoenix**  
**Jaconelli, Silvio, Gilbert, AZ,**  
**Jane, Pedro, Mesa**  
**Johnston, Mark, Scottsdale**  
  
**Kearney, Jane & Bob, Mesa**  
**Keating, Kirk, Mesa**  
  
**Kelley, Bob, Scottsdale**  
  
**Kerwin, Robert, Fountain Hills**  
**Kirschner, Mel, Scottsdale**  
**Kraljic, Frank, Scottsdale**  
**Krupp, Bill, Mesa**  
**Kutok, Warren, Mesa**  
  
**Lee, Eron, Phoenix**  
  
**Lindblad, Craig, 737 N. Rico Cx, Mesa**  
  
**Lucas, Gene, Fountain Hills**  
  
**Mackay, Gordon, Glendale**  
  
**Manberg, Chuck, Peoria**  
  
**Mann, Stewart, Scottsdale**  
  
**McFarland, Chris, Chandler**  
  
**McKellar, Malcolm, QLD Australia**  
  
**McLoughlin, Beth, Chandler**  
  
**McNeely, Aaron, Phoenix**  
  
**Misner, Jerry, Chandler**  
  
**Muller, Tony, Paradise Valley**  
  
**Murray, Joe, Scottsdale**  
  
**Newman, Fred, AZ**  
**Norby, Bob, Tempe**  
**O'Brien, Tom, Mesa**  
  
**O'Dwyer, Steve, Mesa**  
  
**Ortega, Tony, Phoenix**  
**Peters, Bill, Gilbert**  
**Peterson, Eric, Phoenix**  
**Peterson, Jim, Tempe**

**Peterson, Randy, Scottsdale,**  
**Pfeifer, Mike, Tempe**  
**Polakis, Tom, Tempe**  
**Pomerantz, Evan, Chandler**  
  
**Porter, Dave, Chandler**  
  
**Rachkofski, Rick, Phoenix**  
  
**Rhoads, Kelton, Tempe**  
  
**Richards, Wayne, Scottsdale**  
  
**Romney, Lika, Phoenix**  
  
**Roos, Floyd, Mount Kisco, NY**  
**Roquemore, Steve, Scottsdale**  
  
**Rose, Gene, Scottsdale**  
  
**Rosen, Todd, Mesa**  
  
**Sanden, Bernie, Tempe**  
  
**Santori, Paul, Scottsdale**  
  
**Sargeant, Mike, Tempe**  
  
**Schmidt, Nicholas, Phoenix**  
  
**Schug, Sonny, Scottsdale**  
  
**Schur, Chris, Payson**  
**Schwaar, Pierre, Phoenix**  
  
**Scott, Byron, Scottsdale**  
  
**Shorb, Stan, Paradise Valley**  
  
**Siler, Joseph, Mesa**  
  
**Simmon, Dick, Scottsdale**  
  
**Smalley, Rob, Chandler**  
  
**Smith, Bill, Mesa**  
  
**Smith, Steve, Tempe**  
  
**Spinelli, Matthew, Scottsdale**  
  
**Spruell, Ken, Phoenix**  
  
**Stiles, Emerson, Scottsdale**  
  
**Swanson, Bob, Scottsdale**  
  
**Teets, Jonathan, Scottsdale,**  
**Thompson, Mike, Phoenix**

- Trollen, Tom, Mesa**
- Uhrhammer, Bob, Eloy**
- Vames, John, Scottsdale**
- Visintainer, Carl, SunLakes**
- Waters, Jim, Phoenix**
- Weide, Bill, Chandler**
- Wilson, Russell, Phoenix**
- Wlasuk, Peter, Scottsdale**
- Wrigley, Don, Apache Junction**
- Xavier, St. Francis, Phoenix**
- Zarkos, Art, Scottsdale**
- Zmyslinski, Ronald, Scottsdale**
- Zullo, Frank, Mesa**

### All-Arizona Star Party

Mark on your calendars, the All-Arizona Star Party for October 11 and 12. The star party will be held at the Arizona City Site (See map below).

The site is on private land and should only be used during an approved club star party where the club has obtained permission from the owner. The site is dark; the glow from Phoenix is placed to the north, fainter glows from surrounding communities can be seen to the east. Drive time from the East Valley is typically 11/2 hours or less.

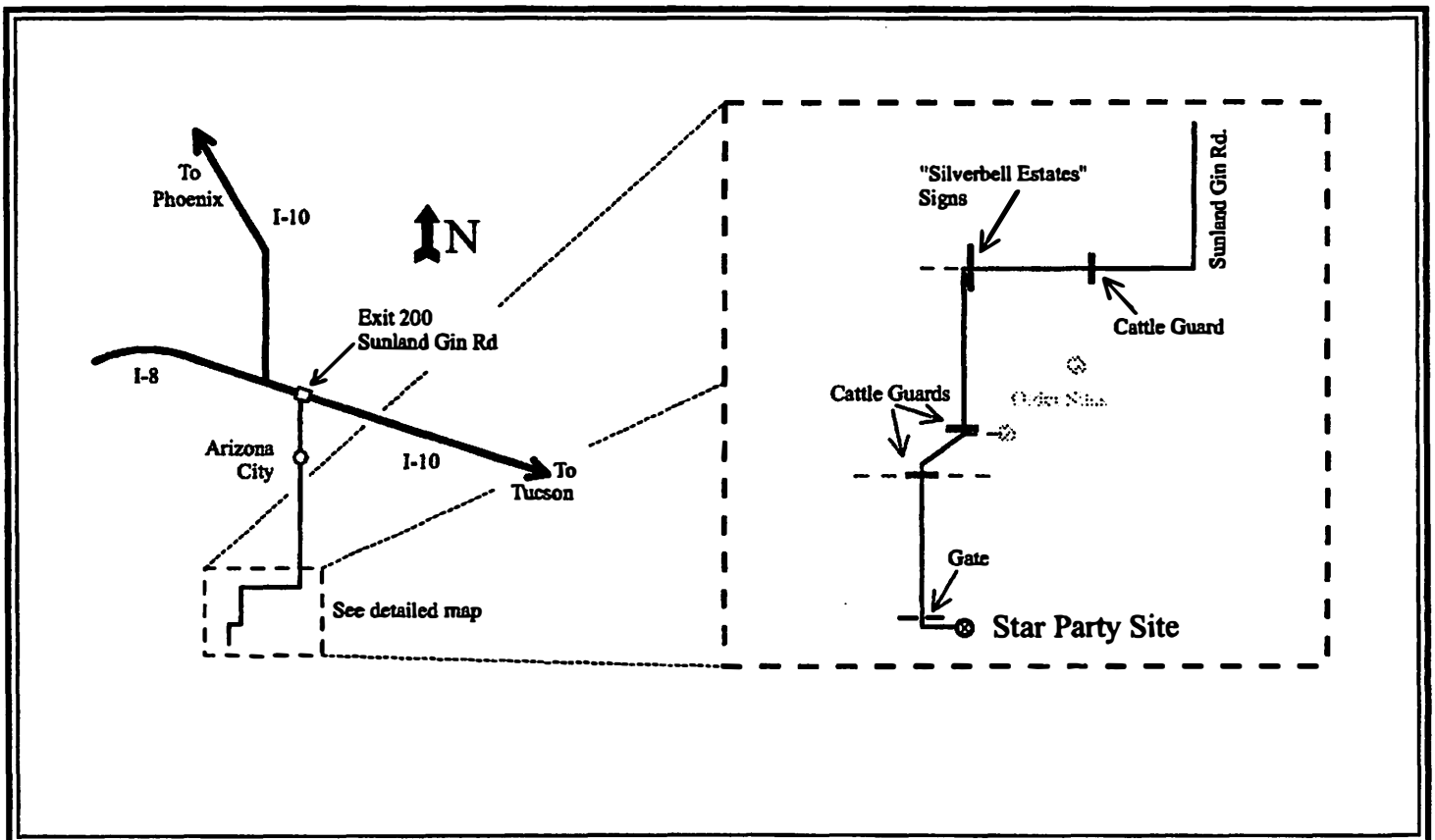
Take I-10 south from Phoenix to Exit 200, Sunland Gin Road. Turn right (south) after exiting the freeway. After about 15 miles, the pavement ends and about one mile further, the road turns sharply to the west. After another four miles, the road will turn south just after the "Silverbell Estates" signs. Three miles past the signs, the road will veer off to the west. Continue on the main road for another five miles, where it passes through a gate. Take an immediate left after the gate and continue for about 1/4 mile. Take the next right onto a road that leads into an abandoned field.

### For Sale

Hi,

Unfortunately, an eye problem has forced me from my long interest in astronomy and I might as well sell my equipment. Before starting to advertise it, thought would notify the clubs in the area in case any members might be interested. I do have to let it all go as a package deal.

Listed below is all the equipment for sale. I am sure you are familiar with the Taurus camera. (contd p.9)



Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

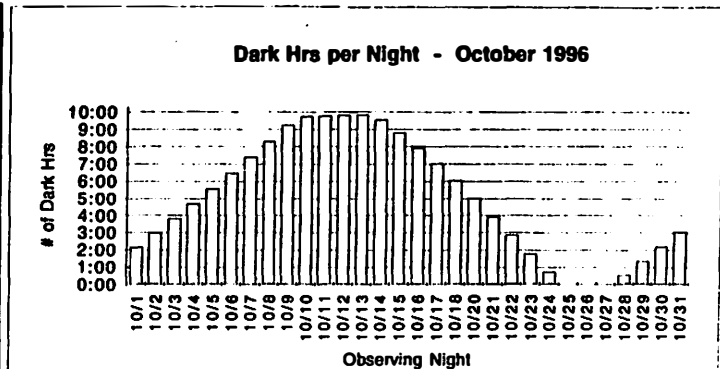
<p><b>29</b> *10:10 PM Occ</p>	<p><b>30</b></p>	<p><b>1</b> *ALL MONTH NOTES</p>	<p><b>2</b> *2:12 AM Occ</p>	<p><b>3</b> *Mercury at Greatest West Elongation *7:00 PM PAS Mtg</p>	<p><b>4</b></p>	<p><b>5</b>  <span style="border: 1px solid black; border-radius: 15px; padding: 2px;">Local S Party</span> *Kit Peak Star Party</p>
<p><b>6</b> *5:27 AM Occ *7:27, 8:44, 9:41 PM Gal Moons</p>	<p><b>7</b> *4:40 AM Algol at Min *6:03 AM Occ-graze limit nearby</p>	<p><b>8</b></p>	<p><b>9</b> <span style="border: 1px solid black; border-radius: 15px; padding: 2px;">EVAC Meeting</span> *Nominations for 1997 Club Officers</p>	<p><b>10</b> *1:28 AM Algol at Min</p>	<p><b>11</b></p>	<p><b>12</b>  <span style="border: 1px solid black; border-radius: 15px; padding: 2px;">All-AZ Star Party</span> *10:17 PM Algol at Min</p>
<p>Sunset 6:04 PM      Sunrise 6:28AM</p>						
<p><b>13</b></p>	<p><b>14</b></p>	<p><b>15</b></p>	<p><b>16</b></p>	<p><b>17</b> *8:40 PM Occ</p>	<p><b>18</b></p>	<p><b>19</b> </p>
<p><b>20</b> *Fair S Lunar Libration</p>	<p><b>21</b> *Orionid Meteors</p>	<p><b>22</b> *7:04, 8:05, 9:19 PM Gal Moons</p>	<p><b>23</b></p>	<p><b>24</b></p>	<p><b>25</b> *7:30 PM SAC Mtg</p>	<p><b>26</b>  *11:29 PM Occ</p>
<p>Sunset 5:47 PM      Sunrise 6:39AM</p>						
<p><b>27</b></p>	<p><b>28</b> *Hale-Bopp/M14 Conjunction</p>	<p><b>29</b> *10:49 PM Occ *7:49, 8:29, 9:59 PM Gal Moons *Good N Lunar Libration</p>	<p><b>30</b> *3:10 AM Algol at Min *11:55 PM Occ</p>	<p><b>31</b></p>	<p><b>1</b> </p>	<p><b>2</b> <span style="border: 1px solid black; border-radius: 15px; padding: 2px;">Local S Party</span> *5 Teardrop Meteors</p>

Date	Start	Title	Description
10/1/96	12:00 AM	ALL MONTH NOTES	<p><b>CALENDAR NOTES:</b> See 1996 EVAC Occultation Predictions in the February newsletter for details on lunar "Occ" events. "Gal Moons" refers to at least 3 events of Jupiter's satellites. See Sky&amp;Telescope (S&amp;T) and Astronomy (ASTRO) magazines for more info. Planetary "Marathon" possible early in the month—see all nine planets in one night's observing.</p> <p><b>PLANETS:</b> MERCURY rises right at dawn early in the month. On the 6th at 5:30 AM, it can be found 5 degrees above the eastern horizon at nearly -1 mag. On the 11th, it's 3 degrees above a crescent Moon. VENUS rises around 3:30 AM and dominates the eastern sky at a brilliant white -4.1 magnitude. MARS is small and 200 times fainter than Venus in the morning sky, rising about 2:00 AM. JUPITER is getting lower in the SW at nightfall, setting by 10:30 PM. SATURN is up all night. The pale yellow 1st magnitude "star" is located in the SE at nightfall. The ring tilt is 5 degrees (south side visible). URANUS and NEPTUNE are about 20 degrees east Jupiter and on the meridian at dusk. PLUTO sets early in the evening now, found about 20 degrees high in the W-SW around 7:30 PM. See pg 64 of the July ASTRO or pg 70 of the April S&amp;T for findercharts.</p> <p><b>OBJECTS OF INTEREST:</b> Comet Hale-Bopp (pg 72 of Sep S&amp;T; pg 82 of Oct ASTRO). Zodiacal Light (pg 65 of Oct ASTRO). Earth crossing Minor Planet 4197 (pg 68 of Oct S&amp;T). Minor Planet 3 Juno (pg 66 Oct ASTRO; pg 69 Oct S&amp;T). Planetary Marathon.</p>
10/3/96	7:00 PM	7:00 PM PAS Mtg	Phoenix Astronomical Society meeting, Brophy Prep, 4701 N. Central Ave. Turn off Highland into Main entrance, follow signs upstairs to Physics lab.
10/5/96	6:00 PM	Kit Peak Star Party	See September Club newsletter for details. Prior permission is required and everyone must leave the mountain by 1:00 AM.
10/21/96	12:00 PM	Orionid Meteors	Predicted max during daylight, but increased meteor activity will be evident up to 4 days before and after the 21st. Radiant rises about 11 PM and up to 20 Orionids per hour can be expected from a good, dark site. Moon interferes until early AM.
10/25/96	7:30 PM	7:30 PM SAC Mtg	Saguaro Astronomy Club meeting, Grand Canyon University, Fleming Bldg, Rm 105. Camelback and 33rd Ave.
10/28/96	9:00 PM	Hale-Bopp/M14 Conjunction	Comet Hale-Bopp closes to within 1/3 degree of this globular cluster over the next two nights.

### Dark of the Moon Table — October 1996

OBSERVING NIGHT	START OF DARK	END OF DARK	TOTAL DARK	OBSERVING NIGHT	START OF DARK	END OF DARK	TOTAL DARK
TUES NITE	10/1 7:34 PM EOT	10/1 9:44 PM MR	2:10	WED NITE	10/16 9:15 PM MS	10/17 5:12 AM SOT	7:57
WED NITE	10/2 7:33 PM EOT	10/2 10:32 PM MR	2:59	THURS NITE	10/17 10:11 PM MS	10/18 5:13 AM SOT	7:02
THURS NITE	10/3 7:31 PM EOT	10/3 11:22 PM MR	3:51	FRI NITE	10/18 11:11 PM MS	10/19 5:14 AM SOT	6:03
FRI NITE	10/4 7:30 PM EOT	10/5 12:13 AM MR	4:43	SUN NITE	10/20 12:14 AM MS	10/20 5:15 AM SOT	5:01
SAT NITE	10/5 7:29 PM EOT	10/6 1:05 AM MR	5:36	MON NITE	10/21 1:19 AM MS	10/21 5:15 AM SOT	3:56
SUN NITE	10/6 7:27 PM EOT	10/7 1:57 AM MR	6:30	TUES NITE	10/22 2:24 AM MS	10/22 5:16 AM SOT	2:52
MON NITE	10/7 7:26 PM EOT	10/8 2:51 AM MR	7:25	WED NITE	10/23 3:30 AM MS	10/23 5:17 AM SOT	1:47
TUES NITE	10/8 7:25 PM EOT	10/9 3:44 AM MR	8:19	THURS NITE	10/24 4:35 AM MS	10/24 5:18 AM SOT	0:43
WED NITE	10/9 7:24 PM EOT	10/10 4:39 AM MR	9:15	FRI NITE	none	n/a	--
THURS NITE	10/10 7:22 PM EOT	10/11 5:08 AM SOT	9:46	SAT NITE	none	n/a	--
FRI NITE	10/11 7:21 PM EOT	10/12 5:09 AM SOT	9:48	SUN NITE	none	n/a	--
SAT NITE	10/12 7:20 PM EOT	10/13 5:09 AM SOT	9:49	MON NITE	10/28 7:03 PM EOT	10/28 7:35 PM MR	0:32
SUN NITE	10/13 7:19 PM EOT	10/14 5:10 AM SOT	9:51	TUES NITE	10/29 7:02 PM EOT	10/29 8:23 PM MR	1:21
MON NITE	10/14 7:36 PM MS	10/15 5:11 AM SOT	9:35	WED NITE	10/30 7:01 PM EOT	10/30 9:13 PM MR	2:12
TUES NITE	10/15 8:23 PM MS	10/16 5:12 AM SOT	8:49	THURS NITE	10/31 7:01 PM EOT	10/31 10:04 PM MR	3:03

EOT = End of Astronomical Twilight MR = Moonrise SOT = Start of Twilight MS = Moonset NOTE: Applies to Phoenix area (Mtn Std Time)



Bernie Sanden 8/96



Everything is in perfect condition, some is brand new & unused. If there are any questions, call 602-488-0737 or e-mail: geoff@aztec.asu.edu.

Sincerely,

Geoffrey Orton

PO Box 2893

Carefree, AZ 85377

Astronomical Telescope & Astrophotography System for Sale Celestron Powerstar 8-PEC Schmidt-Cassegrain 8-in telescope, with: Hand controller, Wedge, Celestron 30mm Plossl eyepiece, Tripod, Star diagonal, 6X30 finderscope, Trunk case and Owner's Manual.

Celestron Focus Motor (never used)

Dew Zapper anti-dew system

Telrad finder in original box

2 Orion Equip cases, 11x7x3 and 8x6x2 (for lenses, filters, etc)

4 Sirius Plossl lenses: 25mm, 17mm, 10mm & 7.5mm (all w/lens caps)

Tele Vue 1.8X Barlow lens

Orion Plossl 12.5mm Illuminated-Reticle Eyepiece (w/lens caps)

Orion SkyGlow Broadband filter (never used)

5 Filters: #96 Neutral Density, #58 Red, #80A Blue, #25 Red, #15 Yellow

Piggyback camera mount attached to telescope

3 rubber eyepiece guards

Power supply, 110V AC to 12 V DC w/dew zapper connector & LED light

**Taurus Astrocamera System.** This is a special astrophotography system made of very lightweight materials, including everything needed to take astrophotos. The system can also be used with CCD cameras. It includes:

35 mm camera

Tracker w/built-in 2.5X Barlow (off axis guider)

4.25" extension

Calibrator, battery operated for pre-focusing

2 standard eyepiece holders w/magnets

Filter holders & spacers

1 roll of Konica 3200 ISO film

Hour Circle - great gizmo for quick polar alignment w/Telrad finder

Misc books, maps, catalogs, magazines and guides

### **The Taurus Astrocamera**

by Geoffrey Orton

After working with a Pentax K1000 piggyback, I was ready to start deep sky prime focus work. Before I could order the required off-axis guider, T-adaptor tele extender and counter-weights, I noticed an ad for the Taurus astrocamera in S & T Magazine.

The description in their brochure seemed too good to be true, but my experience so far has led me to believe that this is one of the best-kept secrets in astrophotography. For those not ready to move to CCD because of the cost or complexity, I can recommend this system. It has everything needed for both prime focus

and eyepiece projection, and weighs less than a 35mm camera, guider & mount. Even if you already have a suitable camera, it also has several other advantages.

The camera, its off-axis guider (called the Tracker), eyepiece holders, filter holders and 4.25" extension are constructed of machined acrylic, phenolic and aluminum. They weigh considerably less than normal equipment and a 35mm camera, and not much more than a star diagonal and eyepiece. This does away with the need for counter-weights and saves wear and tear on the motor and battery.

The system eliminates the need for SLR cameras with the inherent problem of finding and focusing on dim objects as well as the vibrations resulting from tripping the shutter and the mirror slap. It permits target acquisition and guiding through regular eyepieces. It uses standard 35mm film, has a magnetic manual shutter and in guiding, the observer can view the target and the tracking star simultaneously.

The Tracker has a 2.5x Barlow built in and lets you use your eyepieces to focus the scope, view and guide in three separate openings (or "ports"). It is available with adapters for any type of scope.

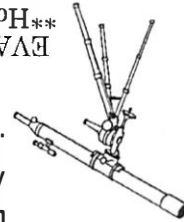
The camera, tracker and filter holders have magnets so they snap right into place without any fumbling in the dark, and can be further secured with supplied plastic screws if desired.

One or more frames of film may be cut out (in a darkroom or changing bag) after exposure for immediate processing. The shutter is manual and is designed primarily for long exposures. There is no mirror to cause vibration and even with eyepiece projection using the 4.25" extension tube, vibration stops a few seconds after opening the shutter.

The owner's manual is very comprehensive. Although it seems a bit daunting at first and somewhat complex, once it is all digested it makes perfect sense and is easily followed. The system comes with a battery-operated calibrator that focuses the lens in its holder, which can be accomplished in total darkness. Once this is done, the lens and holder are put in the port in the back of the tracker and the scope is focused. Then a lens is placed in the viewing port, moved up and down until it is in focus, and that eyepiece is used for both viewing the subject and changing focus if necessary. The original lens and holder are removed and the camera is snapped into place in the same Tracker port and it is ready for exposures.

I was quite skeptical of the ability of this camera to perform as advertised, but it lives up to its claims. Other than CCDs, it is the only system I've seen designed specifically for astrophotography that the average amateur can afford.

EVAC member since 1/17/92!  
\*\*Hope to see you at the meeting Oct. 8th\*\*



Don Wrigley  
Ave



**EAST VALLEY ASTRONOMY CLUB**  
Robert G. Kearney, Jr., Editor  
2120 W. 8th Ave.  
Mesa, AZ 85202

### EAST VALLEY ASTRONOMY CLUB

<b>President:</b> Robert Kerwin 837-3971	<b>Vice-President:</b> Tom Polakis 967-1658	<b>Treasurer:</b> Sheri Cahn 246-4633	<b>Secretary:</b> Sam Herchak 924-5981	<b>Properties:</b> Steve O'Dwyer 926-2028
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**MEMBERSHIP & SUBSCRIPTIONS:** \$20.00 annually. Reduced rates available to members for *Sky & Telescope* and *Astronomy*. Contact Sheri Cahn, 3721 W. Hayward Ave., Phoenix, AZ 85051, (602)-246-4633.

**CLUB MEETINGS:** Second Wednesday of every month at the Scottsdale Community College, 7:30 PM. Normally Room PS 170 or 172 in the Physical Sciences Building.

**NEWSLETTER:** Published and mailed out the week before the monthly Club meeting. Send your thoughts and stories for publication to: Robert G. Kearney, Jr., 2120 W. 8th Ave., Mesa, AZ 85202, (602)-844-1732. Email to: JRKearney@aol.com.

**CHANGE OF ADDRESS:** Notify Bill Smith, 1663 S. Sycamore, Mesa, AZ 85202, (602)-831-1520. Email to: bsmithaz@aol.com.

**EVAC LIBRARY:** The library contains a good assortment of books, downloaded imagery, and helpful guides and is usually brought to the Club meetings. Contact Steve O'Dwyer for complete details, (602)-926-2028.

**BOOK DISCOUNTS:** Great savings for members through Kalmbach and Sky Publishing Companies. Contact Sam Herchak, 145 S. Norfolk Cir, Mesa, AZ 85206-1123, (602)-924-5981.

**EVAC PARTY LINE:** Let other members know in advance if you plan to attend a scheduled EVAC observing session. Contact Robert Kerwin, (602)-837-3971. Email to: p24493@gegpo7.geg.mot.com.