East Valley Astronomy Club

October 2000 www.eastvalleyastronomy.org Scottsdale, Arizona

President's Message

By Silvio Jaconelli

The EVAC Board held the latest quarterly meeting at Stan Ferris' house on Fri Sept 8. Thanks to Stan for his hospitality that evening!

Topics covered included:

Nominations for the Board and Officers for the year 2001 were discussed. It looks like we have a full roster of nominations:

- President - Chuck Crawford
- Vice President - Dave Coshow
- Treasurer - Martin Bonadio
- Newsletter - Jim Kline
- Properties - Rick Scott
- Secretary - Tom Mozdzen
- Board:
  Randy Peterson Stan Ferris
  Joe Goss Ken Levy
  Gene Lucas Steve Bell

More volunteers will be welcome, so please do not hesitate to let me know if you wish to serve the club in any capacity. Nominations for all positions started to be taken in September, will remain open until October, and the elections will take place at the November monthly meeting.

Rick Scott raised the subject of special interest groups within the club, where members interested in specialized areas can get together to pursue these areas in depth. Examples of special interests would be telescope making, double star observing, galaxy observing, etc. So please stay tuned to further news on this topic. And thanks to Rick for taking the initiative on this.

The current Treasurer is unable to complete the 12-month tenure, so I will be acting Treasurer until the new Treasurer for year 2001 is able to assume this responsibility. Since I have held this position in the past, it will be very easy for me to handle this.

A financial report for the year up to the end of August was presented. This showed that the cash balance is remaining fairly static at around $4,000. A budget proposal for year 2001 was also presented, and once again this projected a cash balance at the end of that year at around $4,000. There was some discussion as to whether the club ought to change this state of

EVAC & Other Events: 2000

	New Moon	Meet	Local	Deep Sky	Other
Sep	27th	13th	23rd	30th	9/22 – 9/23 N. AZ Star Party 9/28 – 10/1 Enchanted Skies Star Party Socorro, NM
Oct	27th	11th	21st	NA	10/14 Adopt-a-Highway 10/21 SAC/EVAC Picnic 10/28 All-AZ Star party – AZ City
Nov	25th	8th	18th	NA	Elections
Dec	25th	13th	16th	23rd	12/9 Christmas

equilibrium, but after due discussion it was decided to leave the Finances unchanged.

It was decided to re-start the Beginners' Labs, now that better observing weather is just around the corner. Both Martin Bonadio and Dave Coshow have volunteered to be hosts for these labs, Dave handling SCTs, and Martin handling all other telescopes. These labs are designed to for the novice amateur astronomer and for anyone who has an interest in looking into the hobby; they are rudimentary classes held at the homes of the hosts, and are very much 'hands-on' affairs where the participants are encouraged to ask questions on any and all topics such as equipment, observing techniques, astronomy books, etc.

New member packets (materials for new members) will be handed to those new members who sign up at the Wed night club meetings; those new members who sign up via the Web will have soft copies sent to them electronically; then Ken Levy will handle all other members who do not fit into the above categories. Thanks to Ken for helping out here.

Once again, I want to remind members of the length of time that it takes to renew magazine subscriptions through the club discount program. So please get these renewals (monies plus the renewal slip) to the Treasurer as soon as you receive the renewal slip through the mail. That way you will be assured of not missing any issues.

From the Vice-President

By Chuck Crawford

OCTOBER MEETING

Our meeting will be devoted to the annual SHOW & TELL and SWAP MEET. For those who have been waiting for the opportunity to display and talk about their astronomy interests and show what they have done here is your chance to take center stage. Contact either Silvio or myself to get on the list of presentations.

Also anyone with items to swap or sell this is a chance to bring that item and see if others may be interested or trade their items. Remember someone's discard may be someone else's treasure! astroc@mindspring.com or 480-985-8824.

SAC/EVAC JOINT PICNIC

On Saturday October 21 our first ever "joint picnic" with the Saguaro Club will occur. Starting time is 3:00 pm at the Lost Dutchman Park. Admission fee has been raised and is $ 5.00 per vehicle so you may want to car pool.

This will also be a joint star party so bring your scopes. Eats will be potluck. Bring your favorite dish - beans, vegetables, casserole, salads, desserts, meats to grill and buns. The clubs will furnish charcoal, starter fluid, ice, soda, plates & cups, utensils, mustard, relish, pickles and ketchup, paper products. No alcohol is permitted in the park!

Our location has been confirmed and we will be located in the Saguaro group Ramada! Take Hwy. 60 (Superstition Frwy) to Idaho Road exit in Apache Junction crossing Old West Hwy until you reach Hwy 88 (Apache Trail), turn right and continue northeast on that until you reach the park entrance on the right. Lost Dutchman Park! Enter the park (right turn) and once inside keep to the right and follow it until you reach the site. A sign will say Saguaro site. There are grills, a covered Ramada and restrooms there.

The event will go on rain, snow, sleet or hail (HA), clouds or clear (hopefully). See you there!

INPUT FOR NEXT YEAR

Members are asked for their input as to what events, get-togethers, types of speakers, special subjects or any other worthwhile things they would like to see occur starting with our January meeting and continuing throughout year 2001. Please put them in writing (brief note) and give them to the officers at our meetings in October and November so planning can begin promptly. This is your chance to input future club activities so be creative.

2000 CHRISTMAS PARTY

The Christmas Party is scheduled and a site selected. It is December 9 at Alta Vista Apartments in the clubhouse located at 1444 North Recker Road (between McKellips and Brown) in Mesa. The club will provide subs and pizza. The rest of the goodies are potluck.

Parking is ample but please do not park under the covered places. The facility has a pool table, card tables and plenty of seating. Outside is a large heated pool, Jaccuzzi, shuffleboard courts, putting green, exercise room that are all available to us.

The facility is reserved for us free and the only requirement requested is that we clean up after ourselves.

Signup sheets will be available at our October and November meetings. So mark this date on your calendar. Hope to see you there!

EVAC Meeting Minutes

By Tom Mozdzen

09/13/00, **7:35pm** Silvio called the meeting to order. There were about 60 people in attendance, a slight decline from last month's total of 67.

Announcements:

- Sat Oct 14: 7:00am Adopt-a-highway. See Martin Bonadio.
- Sat Oct 21 Joint SAC-EVAC Picnic at Lost Dutchman ~3pm. Sign up at the Sept. meeting or call Chuck Crawford.
- Sat Oct 28th – All Arizona Star Party. – see inside for details.
- Sat Dec 9th Christmas Party @Recher and Brown in Mesa.
- Wed Dec 13th EVAC Christmas meeting with Rick and Joe's marvelous slide show.
- Tom Polakis will have an article in the October issue of Astronomy Magazine titled "Telescopium, Indus & Pavo".

Beginner's Lab

Signup sheets were presented for new members interested in a beginner's lab. So far we have two categories:

Schmidt Cassegrains – Dave Coshow 480-730-1132.
All others – Martin Bonadio 480-926-4900.

Gilbert Astronomy Program Update.

It is one year old now and has reached ~1000 people. Joe Goss, Jason Nelson, Silvio Jaconelli, and Dave K. were recognized among others. A sign up sheet was presented as additional helpers are needed. Contact xxx for further details. Win Pendleton 480-503-0734. 2nd Friday of the month 8pm. Gilbert library at Greenfield and Guadalupe.

8:05 – 8:25 Break

8:25-9:35 Main Speaker

9:35 – 9:45 Show and Tell

Steven Aggas showed us photos of his self-built 20" Newtonian telescope. He also showed us some of his exposures using a CCD camera.

9:45 Meeting Adjourned

September EVAC Board Meeting Minutes

By Tom Mozdzen

September 8, 2000

The board meeting was held at Stan Ferris' home and began at 7:30pm after a Boston Market meal.

Elections: The board and office slate of candidates was reviewed. Currently we have:

Officers:

- Chuck Crawford President
- Open Treasurer
- Tom Mozdzen Secretary
- David Coshow Vice President
- Jim Kline Newsletter Editor
- Rick Scott Properties

Board Members:

- Randy Peterson
- Stan Ferris
- Joe Goss
- Ken Levy
- Gene Lucas
- Martin Bonadio

Silvio agreed to serve as Treasurer until the new Treasurer is elected.

New member packets will be handed out by the treasurer to new members at the time the membership check is received. Otherwise, electronic copies will be emailed out when a new member joins.

Budget: $4400 currently, $4000 at the beginning of the year, and $3800 projected for year's end. Yearly insurance to the club is at $350/yr. This is a new expense as a club member previously provided it gratis.

SIG: groups were discussed. Rick will discuss this topic at the September Club Meeting, and serve as SIG chairman.

Beginners Lab. Silvio will chair the Beginners Lab.

New Business: Pedro Jane has begun organizing the Arizona Star Party. Porta-Potties found and secured. The "directions flier" was reviewed. The only expense to the club is $100 for the Porta-Pottie.

Magazines have been pouring into the club properties. Rick has been authorized to buy a book shelf in the range of $50.

A vote was taken to reduce the annual dues below $20. The proposal was defeated 7 to 1. The main argument against was that the current budget breaks-even annually so that the current income equals the outflow.

The meeting was adjourned at 8:45pm.

Halloween Treat

By Joe Hobart

Last October 31 I set up an 8" Celestron in front of my house and showed trick-or-treaters Jupiter and Saturn.

The response from about 45 youngsters, a few teens, and about 20 parents was enthusiastically positive. Some of the youngsters were so impressed with the view; they forgot to ask for a sugar treat (and I offer tasty sweets)!

This Halloween, Saturn and Jupiter will rise about 8 pm, which is a bit late for youngsters. The four to five day old crescent moon, however, will be visible low in the southwest for several hours after sunset. This will be especially attractive for those with a good view of the southwest horizon.

Other possible targets include colorful double star Gamma Andromeda, the double cluster in Perseus, and for those who live away from city lights M-15 and M-31. Considerable explanation would probably be

necessary for deep sky objects, though. The moon is a natural crowd pleaser, but it will be fairly low in the sky on October 31. For those late evening ghouls, Saturn and Jupiter rise around 8 pm; both planets were extremely popular objects last year.

A word of caution: don't use your best eyepiece; I had to clean Halloween makeup off my inexpensive 26mm Plossl last year. And have a spare eyepiece handy - just in case.

If you want to add a bit of flash to impress the youngsters, consider dressing as a wizard or an astrologer.

Here is the description of the major features visible during lunar days 4 and 5 (from the Astronomical League Astronomy Day Handbook).

Day 4

Mare Crisium is now fully visible, and what an area it has turned out to be! Surrounded by a host of beautiful and different craters, it is truly a sight. If we "drive" around the shores of this mare, we stop by crater Proclus (lying just outside the mare) and even take a look at Picard, which stands out like an island in Crisium. Picard is named for a prominent 17th-century observer, known particularly for his observations of Comet Halley in 1682 and for his suggestion that a great observatory be established in Paris.

Toward the north is another "island," the crater named Peirce. One of the oldest lunar features is prominent tonight: Janssen, a walled plain whose early history has been overwritten by more recent impacts. Janssen's walls have been shattered in several places, so that it no longer appears as a completely formed feature.

Mare Fecunditatis is also fully visible, and we now turn our attention to some of the other emerging maria. Mare Tranquillitatis, the Sea of Tranquillity, and Mare Nectaris are just beginning to yield to sunrise. We also get to see the sharply defined crater Taruntius, whose walls act as a border crossing between Fecunditatis and Tranquillitatis.

Day 5

The "star" of this day is the huge crater Theophilus, easily found right where Mare Nectaris, fully visible tonight, meets Mare Tranquillitatis. Theophilus is one of the Moon's finest craters, displaying a high central peak consisting of several mountains. It forms an interesting pair with its neighbor Cyrillus, a crater whose boundary looks so square that it is hard to define it as a crater. South of Theophilus is the Altai Scarp, just beginning its day as a curved fault line right against a darker surface background. It parallels the shore of Mare Nectaris so closely that it must have been formed at the same time. At the scarp's southeast end is Piccolomini, a sharp, deeply cut feature. Mare Nectaris is also easily visible tonight.

Fracastorius may have been a complete crater once, but today all that is left is an indentation on the south end of Mare Nectaris. Here is a place where a chapter of the Moon's evolution is written in clear language for us. Where is the north wall? When the lava flows that built Mare Nectaris reached the old crater, their forces eroded much of it down to some rounded ridges and hills.

So dig out your lunar atlases, set up your telescope, put on your sorcerer's robe, and impress the ghosts, goblins and aliens with an unexpected astronomical treat. And don't miss an opportunity to tell people that the view would be even better if the city would control their lights.

A Nuclear Halloween Story

By John Matthews

Are you old enough to remember 1960? In 1960, the cold war was in a glaring frozen standoff. Phrases like "Space Race", "Missile Gap", "MAD" (Mutually Assured Destruction), and "Megadeath" were either entering or had already become ominous parts of the national lexicon. The Russians had demonstrated a real capability for developing nuclear weapons, including Hydrogen bombs and had recently shocked U.S. defense planners by successfully launching the first earth orbiting artificial satellite (Sputnik 1, in Oct. of 1957).

In 1960, United States defense measures included the Distant Early Warning or DEW line; a line of radar sites stretching across northern Canada and Alaska, and the new and still under construction, Ballistic Missile Early Warning System (BMEWS). The

BMEWS project consisted of three huge radar sites looking northward from Clear, Alaska, Thule, Greenland, and Flyingdales Moor in England. The idea was to establish continuous radar surveillance of the vast volume of space, which ballistic missiles, launched from the Soviet Union, would have to traverse in order to reach the United States or Canada.

The Thule site, actually located about fifteen miles from Thule Air Base, formed the center of the three-site surveillance line and was the first to be completed. Located at Latitude near 76 degrees North and a Longitude of about 68 degrees West, -- about half way between the Arctic Circle and the North Pole -- the Thule site was well positioned to monitor a huge volume of space over the Polar Arctic and central Russia. The Thule site itself, consisted of an array of buildings located along a curving path more than a mile long -- rather like a huge parenthesis, the convex side of the curve pointed North. Distributed along it were four radar antennas, each 165 feet high and 400 feet long. Quoting from one published account, (the antennas) "face off at various angles, searching thousands of miles across the top of the world and deep into the Soviet Union. BMEWS operates with two fans of radar energy at different elevations. The lower level fan will detect an object as quickly as it rises above the horizon, determine its position and flash a warning to North American Air Defense (NORAD) headquarters. Seconds later, as the object passes through the upper radar fan, its position will be measured again. Instantly computers correlate the two readings, calculate the missile's trajectory, figure out where it was launched and where it will hit, and fire all this information to the Display Board, a 14-foot-square plastic map of Eurasia in the NORAD War Room."#1

Above the map is an alarm level indicator whose range is from 0 to 5, with 0 indicating no threat and 5 indicating a 99.9 percent certainty that an ICBM attack is underway. Other indicators show the size of the attack and the "minutes to go" before the first missile lands on a US or Canadian target.

The radar data is also displayed graphically as dynamic Launch ellipses on the map of Eurasia and as Impact ellipses on a huge corresponding map of North America. As the mainframe Missile Impact Predictor (MIP) computer refines the data the ellipses rapidly shrink to display precise missile Launch and Impact points.

On October 5, 1960 at 3:17 p.m. Mountain Standard Time, these indicators at NORAD headquarters in Colorado Springs, abruptly started showing ominous changes. "The "raid estimate" flashed from its customary, reassuring zero to one, then four, then 99. Our radars had apparently spotted 99 missiles on their way. The "alarm Level" went to five -- very , very serious. The "test" sign was not on."#2 According to the radar returns, this was for real!

The published accounts of what happened next differ. According to one account titled "You Are Under Attack! -- The Strange Incident of October 5", published six months later in the April, 1961 issue of Reader's Digest, The crisis was over within one minute. According to another account, in the April, 1961 issue of Popular Science and titled, "Could a Radar False Alarm Trigger Atomic War?", "Fifteen minutes passed, then 30. None of our cities was missing. After 45 minutes of feverish checking the engineers had the answer."

Some facts, not in dispute, are that Thule's huge BMEWS radars had gone operational and "on line" only five days previously. Also, not disputed was the fact that there were no current U.S. intelligence indicators that would tend to confirm a likely ballistic missile attack. In fact, Soviet Premier, Nikita Khrushchev was in New York, visiting the United Nations and, "It seemed inconceivable that the Soviet Union would launch an attack with Khrushchev in New York."#1 On the other hand the radar returns strong and numerous. Some thing or things were "out there" and they WERE headed our way. The mainframe MIP computer was not generating any Launch or Impact (L & I) points but, "... the BMEWS system was designed to reject any but "significant" echoes. And even when it accepted an echo as significant, it would not recognize it as a missile until it had determined that it was not a satellite going into orbit; that it was headed for North America; and that it would not overfly the continent."#1 Impacts seemed certain, but why were no Impact predictions being generated. Because the commander in chief of NORAD, Air Force General Laurence S. Kuter, was absent on a tour of inspection the man on the hottest of hot seats this day was NORAD's deputy commander in chief, Canadian Air Marshal C. Roy Slemon, a highly decorated veteran of much Arctic flying and according all reports, an extremely capable, calm and unflappable senior officer.

I cannot find a record of whether it was Air Marshal Slemon or another officer on his staff who first thought of the explanation, which quickly proved correct. I do recall being told -- after the story was finally released -- that a "Canadian Air Force officer, who was an amateur astronomer", had first realized what might be going on. I also know that a question from NORAD on the "Hot Line" asking, "When you look

outside, what do you see?", caused consternation at BMEWS, because this massive radar "eye" had been built almost entirely without windows or any other provisions for visual observation. The very high levels of ambient Radio Frequency energy required the entire site to be fully metal shielded. Even the mile long road which connected the seven major transmitter and scanner buildings was completely metal enclosed and although built on the surface was aptly referred to as the "tunnel". The "tunnel" was entered only through the huge double metal doors of an "RF lock".

Finally, someone in the Operations Control room remembered that there were indeed four tiny windows on site -- one in Northmost face of each scanner building. The windows had been used originally to verify the "bore-sighting" of the scanners and had not been removed because they were safely in the RF shadow of their respective building.

The caller from NORAD was anonymously patched through to the operator in scanner building 3 and he asked his question. "What's the weather like and how do things look tonight?" The scanner operator who had already discovered that most of his job was going to be spent just "standing-by" was bored and had already been looking out his little window. He was glad for someone to talk to, and replied enthusiastically, "Its a beautiful night! There's a big full moon right in sector three. And I can even see icebergs down in the fjord."

Well, that was it. So much for the mass raid of Soviet nuclear ballistic missiles -- it was just the moon rising over Norway and headed this way. Not too surprising that no Launch or Impact points could be predicted. Previous radar "moon bounces" -- only recently done, had required care and effort to verify. No one had anticipated that radar echoes from the BMEWS system would return from an object 239,000 miles away with enough strength to be almost indistinguishable from those returning from objects only 2,300 miles away but that was the case.

As you look up at the moon on these October evenings, remember that even a Billion dollar high-tech system can sometimes be fooled by the old moon. Hopefully, there will also always be an astronomer -- amateur or professional to say, "Wait a minute, I know what is going on here."

References:

#1. You Are Under Attack! The Strange Incident of October 5, Reader's Digest, April, 1961, p.37
#2. Could a Radar False Alarm Trigger Atomic War?, Popular Science, April, 1961, p.65
#3. Suddenly, at 4:52 A.M., Newsweek, April 16, 1962, p.27
#4. BMEWS Uses Discrimination Techniques, Aviation Week, March 6, 1961, p.70

Last Call: Fall Adopt-A-Highway Cleanup

By Martin Bonadio

It's time again to have some fun picking up trash! Our Club has its semiannual cleanup of the EVAC Mile scheduled for Saturday, October 14th at 8:00 AM. Our task is to pick up trash from the shoulder of the highway to the right-of-way fence (State crews are responsible for the median dividing the highway).

Look for a sign up sheet at the monthly meeting. With 10 volunteers, we can finish by 11am. Meet at Florence Junction (intersection of Highway 60 and 89) on the north side in the far west corner of the parking lot (closest to the radio tower). As in the past there will be **a club-sponsored lunch** at the Village Inn in Apache Junction (managed by our own Randy Peterson) following the cleanup! These cleanups have always been a great time. But, I still can't figure out how Silvio keeps finding such interesting videos every time out! So, come out, get some exercise, and get to know each other in the daylight.

Hopefully, we'll have some first-timers. They need to know:

Participants must be at least 12 years old and work in groups facing oncoming traffic. Dress appropriately; long pants, sturdy shoes/boots, long sleeves and/or sun block, hat, and heavy GLOVES. Safety vests to be worn will be provided. Please bring some water too, as you'll work up a sweat.

Pick up bags and other litter with caution-it could contain hazardous material, be hiding a snake, etc. A stick with a nail or hook is recommended to use instead of your hands, while a large bucket cuts down trips to the trash bags. Few large objects are found out there, but if lifting one, keep your back as straight as

possible, the object close to your body, and let your legs and arms do the work.

Don't let anything surprise you-our fellow citizens dispose of everything imaginable along our roadsides. If anything looks odd or is really heavy, leave it alone! Note it's location and we'll notify the State about it afterwards. When a trash bag becomes full, place it on the very edge of the pavement, not in the pullout lane.

As with any government program, there are a few requirements to complete before starting. One is a briefing from the cleanup coordinator. The second is to sign the usual waiver for the State saying participants won't sue if something happens. The forms are kept on file so one signature covers you for all future cleanups.

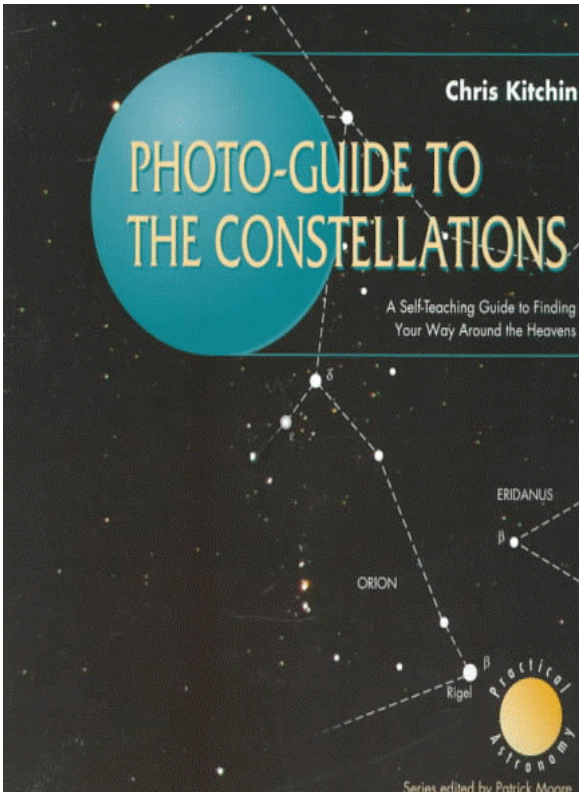
Contact me at 480-926-4900 or email me (mabastro@aol.com) if you want to help or have questions. Thank you.

Library Focus

By Joe Orman

This month's review: ***Photo-Guide to the Constellations*** by Chris Kitchin (part of the Practical Astronomy Series edited by Patrick Moore).

I've often wished for a simple book that would explain the constellations as I see them in the sky. On the left-hand page would be a photo of a section of sky, and on the right-hand page a diagram of the same area, at exactly the same scale and orientation, with all the stars and stick-figure constellations clearly labeled. Unfortunately, this is not the book I have been wishing for. Subtitled "A Self-Teaching Guide to Finding Your Way Around the Heavens," it is intended to be used in the field. But I never got that far; you know you're in trouble when you struggle with a guidebook while reading it in your armchair!



The format of the book sounds promising. For each patch of sky, there is a stick-figure diagram of the constellations, plus three photos of the same area, representing what you'd expect to see with three different levels of light pollution:

- "Typical urban light-polluted site" (actually the suburbs, described with the oxymoron "a typical urban suburb").
- "Good site" ("a few miles out of town").
- "Brilliant site" (a confusing term which actually refers to a dark-sky site).

The light-polluted photos are worthless; you have to squint to see ANY stars. For example, the photo of the Aquila-Ophiucus area shows only one star -- Altair. The photos showing more stars are not much better; viewed by a red flashlight, the stars are all but invisible. If the publisher could not find a way to reproduce photos clearly, they should have simply printed "negatives" of the star diagrams (white dots on a black background). In this case, actual photos may ***not*** be the best choice to accurately represent what a person will see.

There are a lot of other things wrong with this book. The layout is not consistent from page to page; the order of the diagrams vs. photos changes, and not all of

the photos are on same page as the text or diagram that describes them. In some cases, the text refers to three different figures on three different pages -- all that page flipping is bound to lead to frustration. The mythological origins of the constellations are in a separate chapter, and it is never explained how they correspond to the stick figures. And there is also a section of very complicated charts to calculate when each constellation will be in the sky. All of this is so confusing that anyone, especially a beginner, trying to actually use this book in the field will probably become discouraged and give up -- certainly not the intended result!

There's got to be a better way. My imaginary ideal book would have all of the information for each patch of sky (diagram, photo, description, mythology) on two facing pages, even if that meant making the book's dimensions a bit larger. The biggest lesson I learned from this book: A guide designed for use in the field should be clear, organized and concise -- everything this one is not. It's hard enough finding your way around the constellations; you shouldn't need help finding your way around the book.

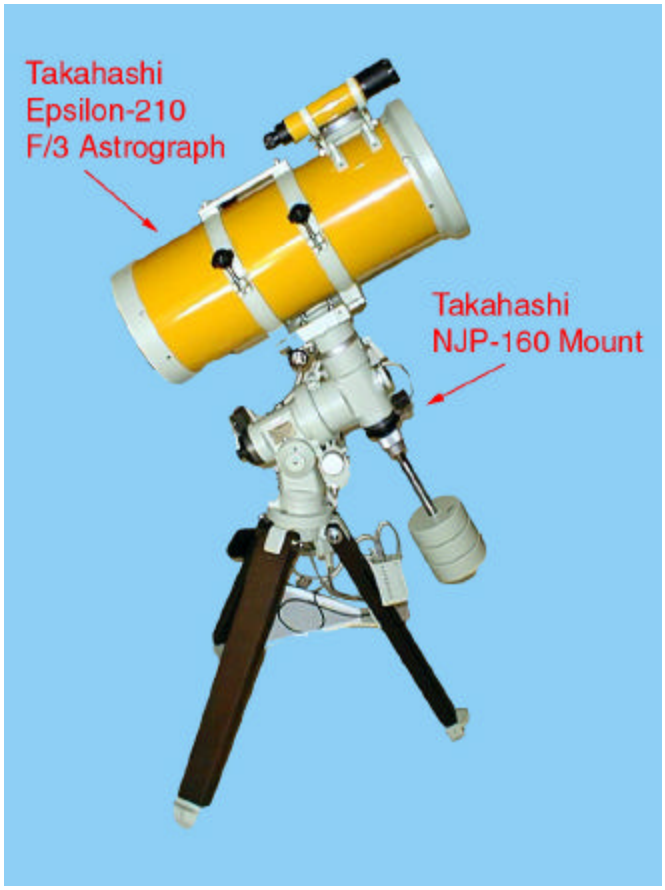
To check out a book from the EVAC library, contact properties manager Rick Scott at rmscott@home.com or (480) 821-5721.

Product Review: Takahashi Epsilon-210 F/3 Astrograph

By Richard Jacobs, M.D.

Over the last three years, my astronomy has migrated from visual observing to CCD imaging. The CCD has allowed me to reclaim my light-polluted back yard in Chandler for observing. It also allows me to keep a permanent record of what I see each night. While imaging deep space objects, I quickly gained an appreciation for the advantages that fast optical systems provide. Focal ratios below F/6 are naturally associated with wider field of views and shorter exposure times for the same image quality, all other things being equal. For this reason, it didn't take much to get me to try out the Takahashi Epsilon-210 F/3 astrograph.

The Epsilon-210 is an expensive Newtonian reflector for its mere eight inches of aperture. But I quickly recovered from the high sticker price when I received the new scope a mere 3 weeks after ordering it. The fit and finish of this telescope is simply perfection. Everything about the Epsilon-210 is solid and proclaims its high quality. The optical tube assembly is an unusually bright yellow color. Takahashi trims the scope with their signature gray-green endplates. My first impression was that this scope is built like naval artillery. The optical tube assembly is 750 mm long and just over 280 mm in diameter. And it weighs in at a heft 35 pounds.



The next feature of the Epsilon-210 to capture my attention was its large, unusual helical focuser. The helical focuser is just over 6 inches wide and consists of three, spoked dials. Takahashi elected to use the helical focuser on this F/3 astrograph in order to facilitate obtaining the precise focus required of short focal ratio optical instruments. In fact, one complete revolution of the helical focuser advances the focus only one (1) millimeter.

The dial used to focus the scope is calibrated and numbered. Each gradation on the focusing dial represents only 0.028 (28/1000) millimeters. A focus-

locking dial is located below the focusing dial. Once a good focus is obtained, it can be permanently secured by tightening the locking dial. Closest to the optical tube assembly is the third and largest dial, which allows the user to orient the camera at any angle without disturbing the final focus. This astrograph can be used for visual observation, but it is clearly designed for photography.

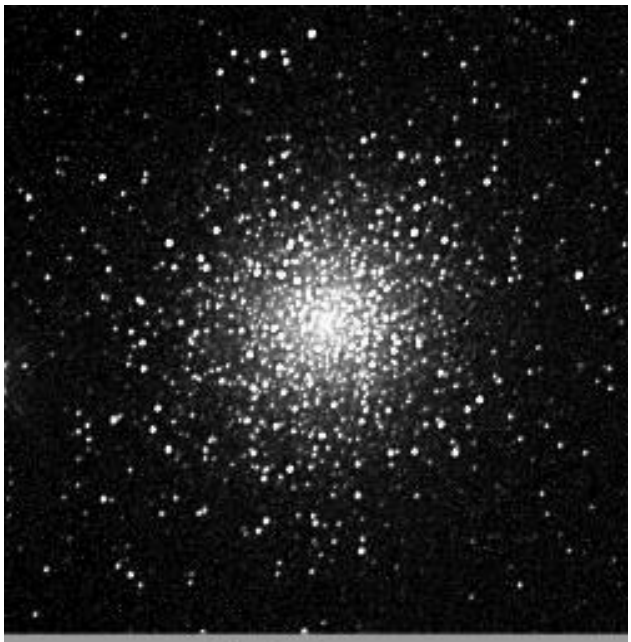
The primary mirror aperture of the Epsilon-210 is 210 mm. It is figured as a hyperbola rather than the usual parabola. Its focal length is 628 mm. For this reason, the helical focuser contains a four-element corrector lens assembly that is self-contained in its own cell. This corrector lens assembly can be removed by loosening three small setscrews in its cell collar. An adjustable vented plate closes off the primary mirror end of the optical tube assembly. Thermal equilibration of the primary mirror can be expedited by opening the vents in the plate. The primary mirror is attached securely to its cell by its center, which is not aluminized. Adjusting a system of three collimation screw sets can make adjustments of the primary mirror.

The secondary mirror is a full 88 mm along its minor axis. Four spider vanes suspend the secondary mirror holder and mirror over the front aperture of the optical tube assembly. The secondary mirror can be rotated or telescoped up and down the long axis of the optical tube assembly after three setscrews are loosened in its attachment collar. A coarse secondary mirror collimation can be obtained with the primary mirror in this way. Adjusting the collimation screws in the head of the secondary mirror holder can make fine adjustments in secondary mirror collimation. Three "pull" screws and three "push" screws can be alternatively tightened or loosened to position the secondary mirror for final collimation. The entire secondary mirror assembly locks down very securely after collimation.

Cloudy monsoon weather has *not* made extensive field-testing of the Epsilon-210 possible. The telescope saw "first light" from my back yard during a brief break in the clouds on the evening of August 20, 2000. With the proper adaptor, the SBIG ST-8e CCD easily attached to the helical focuser of the Epsilon-210.

Focusing the CCD was somewhat of a logistical challenge, as the entire camera has to be twisted around through several 360-degree revolutions to achieve a coarse focus. This is more complicated than it sounds as a parallel cord, auto guider cable, and power cord all connect to the camera itself. Once a coarse focus was achieved, a final focus was easily obtained by making small turns of the helical focuser. This was where the wisdom of this focusing configuration really paid off. And the helical focuser can be locked into position for future imaging sessions.

M15, the globular cluster in Pegasus, was chosen as the test subject. A quick calculation informed me that the Epsilon-210's short 630mm focal length would under sample images for my 9u X 9u pixels in the ST-8e. For this reason, I was anxious to see what a point source object would look like. The image of M15 was breathtaking and sharp as a tack. Resolution of the globular cluster was obtained down to its core. A fine image of M15 was obtained after only three 5-minute integrations.



M15 in Pegasus
(c) August 20, 2000 Richard Jacobs, M.D.
First Light, Takahashi Epsilon 210 F/3 astrograph
SBIG ST-8e CCD, 15 minutes from light polluted site
DDP, Annotated in Adobe PhotoShop

My next test subject was the spiral galaxy in Pegasus, NGC 7331. The Epsilon-210 pulled in the entire galaxy group with only a very brief CCD integration. I was also very shocked to see Stephan's Quintet in the same field of view as NGC 7331! I began to image this amazing site when the monsoon clouds roared in to ruin both the image and my night.

Overall, I am very impressed with the Epsilon-210. Its quality is top notch. But it is expensive and

much better adapted for photography than visual work. The Epsilon-210 is a little tricky to collimate and it is a fairly heavy optical tube assembly. For this reason, a relatively heavy-duty mount is recommended for this scope. In the final analysis, I am very glad I made this purchase and I am looking forward to using it – whenever and if ever the weather clears!

If It's Clear...

by Fulton Wright, Jr.
Prescott Astronomy Club
for October 2000

Shamelessly stolen information from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find data. When gauging distances remember that the Moon is 1/2 a degree or 30 arc-minutes in diameter.

On Saturday, September 30, after 9:45 PM, you can see a complete transit of Jupiter's moon, Europa. With a medium (6 inch) telescope look 5 degrees above the east-northeast horizon for Jupiter. Here is the schedule:

9:45 PM Europa's shadow falls on Jupiter

12:11 AM Europa moves in front of Jupiter

12:19 AM (8 minutes later!) Europa's shadow leaves Jupiter

2:43 AM Europa moves from in front of Jupiter

This month check out Mira, the variable star in Cetus. With your unaided eye, about 10 PM, look 25 degrees above the east-southeast horizon. The minimum of its year long period is about magnitude 9 but it is predicted to be at maximum (somewhere from magnitude 4 to 2) near the beginning of this month.

On Sunday, October 1, at about 6:45 PM, you can see the southeast part of the Moon at its best. With a small (3 inch) telescope look 20 degrees above the southwest horizon for the crescent Moon. Libration tips the lower part of the Moon toward us. While you are looking, check out Antares to the left, and Venus and Mercury down and to the right. The
day before also has a good view.

On Monday, October 9, at about 8 PM, you can see an asteroid near a globular cluster. With a medium (6 inch) telescope look 40 degrees above the south horizon for M 72. 3 arcminutes directly north of it will be 9th magnitude 3 Juno. As the evening progresses Juno will move slightly closer. The next evening Juno will be 1 arc-minute east of a 9th magnitude star, which is 5 arcminutes east-southeast of M 72.

On Tuesday, October 10, after 7 PM, you can see the northwest part of the moon at its best. With a small (3 inch) telescope look 20 degrees above the southeast horizon for the almost full Moon. Libration tips the upper left part of the Moon toward us.

On Sunday, October 15, at about 10 PM, you can see a nice grouping of objects. With your unaided eye look 20 degrees above the east horizon for Saturn and the Moon above, and Jupiter and Aldebaran below. The view is also good the next night.

On Sunday, October 29, at 6:10 PM, you can see a nice grouping of objects. With your unaided eye look 10 degrees above the southwest horizon for Venus and the Moon above, and Antares below.

AZ/CA Border Meteorite Found

By Bill Peters

I bagged my first meteorite Sunday, September 17 in the desert near the CA/AZ border. It is a stony complete specimen with high iron content 1/3 lb (136

gm). The fusion crust is 100% with virtually no chips. It does not appear to be orientated. There are fusion cracks on the outside of the stone about 1 mm deep typical of the high temperatures experienced by meteorites in flight. The identification as a meteorite is certain. I have also found four 1 gram specimens widely scattered from each other within a km of this larger stone. They do not appear from the same parent body though.

I took my find to the AZ Meteorite Center to identify their classifications. They cut the meteorite and were surprised to find that it had been previously melted on its parent asteroid. Apparently, it came from a large asteroid, which had been struck by a smaller asteroid creating basalt filled crater. Then another impact sent the stone hurling toward Earth.

Carlton Moore, director of Meteorite Center ASU, said that there are only 20 - 30 of these known, or about one meteorite per thousand. As of this writing the classification is still being refined - mostly because so few samples exist. It is technically a metamorphosed chondrite. The find on Sept. 17, 2000 is only the 35th official new meteorite discovery in CA. Meteorite hunters have located 39 in the Copper State.

When I first looked at the cut surface it seemed like it had huge chondrules up to 1/2 inch across. These, in fact, are unmelted pebbles that cemented together in the lava ooze. Melted basalt fills in the gaps. Both the exterior and cut surface are a dark steel gray. This palm held stone is just 2.25" x 1.5" x 1.5" or just under a third of a pound. All of the remaining rock chips that I'd thought may be meteorite fragments turned out to be terrestrial.

This is a brand new location for finding meteorites. For more details contact Bill Peters: (480) 813-4242.

Red Plexiglas Light Shields for Laptops

By Tom Mozdzen

Century Plastics is a great place to get a custom shield for your laptop. They will custom cut your order while you wait. I was on my way to the airport and decided to leave 30 minutes early to stop by and get a red shield. I was worried about time. For me, it took a quick 10 minutes. Total charge? $7.00!

But wait – there's more. My original scheme for attaching the pane to my laptop was too clumsy, and I needed a slightly bigger size. I went back and told them the new dimensions. Another 10 minute wait. Total charge this time? $0.00!

How can you go wrong? Put their number in your card file for reference. They have moved since my visit and are now located on 16th between University and Broadway (16th and the river bottom). Here is their address and phone number:

Century Plastics, Inc.
1522 E. Victory Unit #2
Phoenix, AZ

Bill Durham, President
Phone: 602-268-2003 or 1-800-772-7490

For Sale

ETX90-EC, brand new, never out of the box. Will include table-top tripod #880 and a Celestron Solar Skreen that fits over the OTA all for $550.00
Please call Bill Johnsen, 480-962-8998.

East Valley Astronomy Club

EVAC on the Internet

EVAC Homepage: www.eastvalleyastronomy.org

E-mail Mailing Lists

EVAC-mls is a mailing list for club announcements and quick notification of astronomical events.
To join, send E-mail with the "Subject: subscribe" to EVAC-mls-request@psiaz.com

EVAC-Board is for EVAC business. All club members are welcome to participate.
To join, send E-mail with the "Subject: subscribe" to EVAC-Board-request@psiaz.com

AZ-Observing is a fairly general mailing list about observing in Arizona. Included are star party information, who is going, as well as the latest observations and astronomical events.
To join, send E-mail with the "Subject: subscribe" to AZ-Observing-request@psiaz.com

Although EVAC is a private club not open to the public, we do encourage potential new members to initially join us at our club meetings and/or star parties to help them determine the suitability of the club to meet their needs.

East Valley Astronomy Club

Membership Form

Please complete the information requested. Return at the next club meeting or to the address below, with a check made payable to EVAC for the appropriate amount due. *IMPORTANT*: Please note that ALL memberships expire on December 31 of each year.

1. Check one of the following: ( ) New Member ( ) Renewal

2. Select appropriate dues options:

New Member select month joining:
( ) $20.00 January - March
( ) $15.00 April - June
( ) $10.00 July - September
( ) $ 5.00 October - December

Member Renewals *(current Members ONLY!)*
( ) $20.00 Annual Renewal (January - December)

Magazines: *Provide renewals notices with payment.*
( ) $29.00 Astronomy Magazine
( ) $30.00 Sky & Telescope

Name Badges
( ) $7.00 Each

Send To:
EVAC Treasurer
P.O. Box 2202
Mesa, Arizona 85214-2202

_____ **Total Enclosed**

3. Complete requested information below. Please Print.

Name:

_____

Address:

_____

_____

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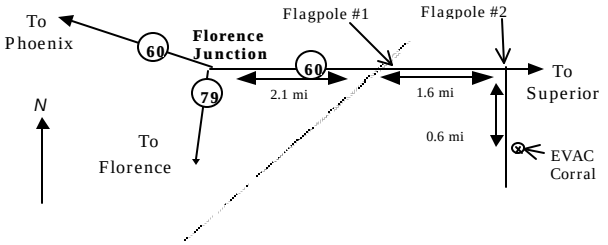
EVAC Star Parties

Local Star Party: Florence Junction Site

General Information: The Florence Junction site is the official site for the East Valley Astronomy Club's Local Star Party, typically held on the Saturday closest to Last Quarter Moon. Florence Junction offers reasonably dark skies within a short drive of most east Valley locations. (Report gunfire or illegal activity: 800/352-3796; Land use permit number: 26-104528.)

Location: N 33° 14' 40" W 111° 20' 16"

How To Get There: Take US 60 east to Florence Junction. Go past Florence Junction. 2.1 mi past FJ are railroad tracks, and on the right will be a flagpole. Do not turn there. Continue on for another 1.6 miles until you find the second flagpole on the right. This is your turn. Turn right, and continue on the dirt road for 0.6 miles. The corral is on the left right before a gas-line sign.

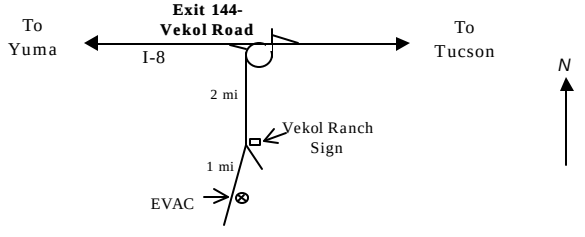


Deep Sky Star Party: Vekol Road Site

General Information: The Vekol Road site is the official site for the East Valley Astronomy Club's Deep Sky Star Party, typically held on the Saturday closest to New Moon. Vekol Road offers dark skies despite prominent sky glow from Phoenix to the north. The site is within 1½ hours drive time from most east Valley locations.

Location: N 32° 47' 55" W 112° 15' 15"

How to Get There: Take I-10 south and exit onto Maricopa Road. Continue through the town of Maricopa to SR 84, about 25 miles from I-10. Turn right on SR 84, after about 5 miles the road merges with I-8. Continue west and exit I-8 at Vekol Road—Exit 144. Turn left and cross the highway overpass. Before looping back onto I-8 take the dirt road to the left. Go south for 2 miles. At the Vekol Ranch sign bear right and continue south for another mile until reaching a large, open area on the left.



EVAC Officers

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Silvio Jaconelli
(480) 926-8529

VICE-PRESIDENT
Chuck Crawford
(480) 735-8042

TREASURER

SECRETARY
Tom Mozdzen
(480) 497-5703

PROPERTIES
Rick Scott
(480) 821-5721

NEWSLETTER/
MEMBER
DATABASE
Martin Bonadio
(480) 926-4900

East Valley Astronomy Club—2000
Scottsdale, Arizona
EVAC Homepage—http://www.eastvalleyastronomy.org/

Membership & Subscriptions: $20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Martin Bonadio. Email—mabastro@aol.com

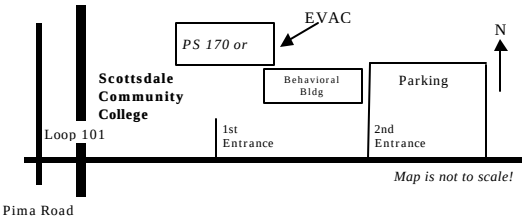
Club Meetings: Second Wednesday of every month at the Scottsdale Community College, 7:30 pm. Normally Room PS 170 or 172 in the Physical Sciences Building. See map below.

Newsletter and Address Changes: Contact Martin Bonadio 921 North Kingston Street, Gilbert, AZ 85233, 480/926-4900. mabastro@aol.com. Contributions may be edited. The Newsletter is mailed out the week before the monthly Club meeting. An electronic version available in Adobe PDF format in lieu of a printed copy. Please contact Martin with delivery your preferences.

EVAC Library: The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Rick Scott for complete details, 480-821-5721

Book Discounts: Great savings through Kalmbach and Sky Publishing. Contact Martin Bonadio.

EVAC Party Line: Let other members know in advance if you plan to attend a scheduled observing session. Contact Stan Ferris, 480/831-7307.



East Valley Astronomy Club

Martin Bonadio, Editor
921 North Kingston St. Gilbert, AZ 85233

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Reminder: Next EVAC Meeting Wednesday, October 11, 2000