

East Valley Astronomy Club

December

Newsletter

1995

EVAC MEETING HIGHLIGHTS

Robert Kerwin opened the November meeting at 7:35 PM with 53 people present. There were four guests including one newly arrived from Grand Junction, CO.

Eclipse Slides

Pierre Schwaar returned from Bangkok, Thailand and the October 24th total solar eclipse with some of his best work to date. He showed about a dozen slides taken with his self made 6" Newtonian reflector working at a 1500mm focal length and Fuji Provia 100 film. The outer corona was beautifully captured along with a red prominence estimated at 120,000 miles high! You can view less impressive scans of these slides on the Internet at URL:

<http://www.indirect.com/www/polakis/eclipse/eclipse.html>

Deep Sky Slides

A new member of EVAC (but no novice to deep sky photography) is Chris Schur of Payson. The work with his homemade 12.5" Newtonian (mirror by Schwaar) and hypered Kodak Tech Pan film is highly published. Chris showed a couple dozen examples of his work with excellent commentary on how the images were taken and details on the objects themselves. A striking example of his work was a 1 hour exposure of Leo 1, a very faint galaxy near the very bright star, Regulus. It records stars down to 20th magnitude! Look for more of his work at future meetings.

Comet Slides

Tom Polakis showed his latest handiwork and experimentation with Fujichrome Provia 1600 film and nighttime landscapes that resemble daytime photographs, except for the starry skies that is. Most of these were unguided panorama shots but Tom also had recent guided exposures of Comets Schwassman-Wachmann 3 and de Vico, both of which are still visible.

Election of 1996 Officers

Club Elections were then held and the following people will be guiding your Club through the coming year. Please offer them your congratulations and support.

President:	Robert "Deep Sky" Kerwin
Vice-President:	Tom "Homepage" Polakis
Treasurer:	Sheri "Nebula" Cahn
Secretary:	Sam "Newtonian" Herchak
Properties :	Steve "Planets" O'Dwyer
Newsletter Editor:	Bob "Quasar" Kearney

Board of Directors are:

Paul Dickson	Ted Heckens	Frank Kraljic
John Durham	Kirk Keating	

FEATURED PRESENTATION

Meteorites were the topic of the night. Randall Whitlock (M.S.), a graduate of Arizona State University who is coauthoring a book on the subject with Peter Manly, spoke for over an hour on where they come from and how to recognize them.

Fresh meteorites are a great way to study the Solar System because they are usually primitive, unaltered, and they come to us! They add many tons of matter to the Earth each day. Researchers estimate there is one recoverable meteorite for every square mile of Earth. > >

UPCOMING CLUB EVENTS

EVAC Club Meeting, Dec. 13, 7:30 PM
SCC, Physical Sci. Bldg, Room PS 172

Local Star Party, Dec. 16, Sunset 5:22 PM
Florence Junction Site

Deep Sky Star Party, Dec. 23, Sunset 5:26 PM
Vekol Road Site

The three main classes of meteorites are: Stones that contain mostly silicates and oxides; Irons which are largely nickel and iron; and the combination Stony-irons. Stones are by far the most common but irons dominate actual finds because they are easier to recognize.

Although meteor showers are typically produced by cometary material, studies show that most meteorites (which by definition reach the Earth's surface) came from asteroids. Stones are fragments from the crust or mantle of asteroids where the irons come from their cores. Stony-irons represent the boundary between mantle and core. Random collisions fragment the larger bodies into the small pieces we typically find on Earth. A special class called SNCs are theorized by some to be material from Mars, but a satisfactory explanation of how these meteorites could have been blasted from Mars without showing signs of stress leaves Randall skeptical. Tektites, a type of "glass" once thought to have originated on our Moon, are now believed to have been formed on Earth during violent impacts of massive meteorites.

The last portion of the lecture was spent teaching us how to recognize meteorites. Typical characteristics are: denser than terrestrial rocks, therefore they feel heavier than they should; blocky shaped with rounded corners; no bubbles; and a dark "fusion crust" created during its fiery passage through our atmosphere. A newly fallen stone-type will have a hot surface that quickly cools while the irons conduct heat quite well and may take hours to cool. The presence of nickel-iron is also a valuable clue. Metallic iron occurs naturally in meteorites, but not terrestrial rocks.

"Meteorwrongs" are often just steel mill castings, old cast iron tools, or rocks with "desert varnish," a black crust that is often seen in desert areas. If the crust doesn't cover the entire surface or can be contrasted with a light-colored bottom surface, it's desert varnish, not a fusion crust.

The best place to look for meteorites? Near known impact fields; dry, windy areas where erosion will expose them; areas without dark rocks (like the Midwest); or dry lakebeds and disturbed soil such as farm fields. Ownership of the meteorite lies with the mineral rights owner on private land and the U.S. Government (curator being the Smithsonian) on federal land. In any case, Randall's advice is to keep good records of any find and share it with a scientific institution for proper evaluation.

Several large meteorites were passed around during the presentation, including a 5 pounder recovered from the Plainview, Texas fall that occurred in the Forties. Also exhibited were samples of the Allende, Mexico fall in 1969, and the Canyon Diablo iron, which is responsible for the formation of Meteor Crater, Arizona.

Although their upcoming book's title hasn't been formalized, look for an excellent reference on meteorites in the near future from Randall Whitlock and Peter Manly.

The presentation ended at 9:50 PM and was followed by lively discussion, brownies from Sheri Cahn and sodas from Don Wrigley. The cleaning staff finally chased us out at 10:30.

PRESIDENT'S CORNER

by Robert Kerwin

Once again, we have a new set of officers and directors and a new year ahead of us. I'd like to start by thanking Don Wrigley for his outstanding leadership of this club over the past year. Through his efforts, the club increased its membership and financial standing. It's going to be a tough act to follow. I'd also like to thank all the other officers and board members for their efforts and am pleased to see that many are continuing as officers and directors this year. The club would not be what it is today without all their efforts.

Not to minimize the efforts of the officers, but the club is really more than just the sum of its officers. Everyone is involved and plays a part. Whether submitting articles for the newsletter, showing slides at a monthly meeting or just showing up for star parties, your involvement is what makes this club exciting. Don't hesitate to get involved; your participation will benefit others as well as yourself.

I have been involved in astronomy since grade school, but I can honestly say that the years I have spent in EVAC have been the most enjoyable. We have a great club with a broad range of knowledge and experience. Not only that, but people are willing and even eager to share their knowledge with others. I look forward to working with all of you in 1996!

DECEMBER MEETING

Come join us for a fun time at the December 13th EVAC meeting! Although we have no scheduled speaker, we will have the usual interesting "show and tell" presentations PLUS a swap meet. There will be plenty of time to socialize and talk astronomy as well as take care of important club business—like renewing your membership. In fact, we have three 1996 calendars to raffle off to people renewing their membership (or joining) at the meeting. Of course, there will be plenty of refreshments!

**TOP 10 REASONS TO NOT
RENEW YOUR EVAC MEMBERSHIP**
by Robert Kerwin

10. If it only costs \$20 a year, it can't be any good...can it?
9. I'd have to spend time sorting out the newsletter from my bills and junk mail.
8. Helpful, friendly advice on choosing the right equipment is fine, but I've got money to burn!
7. People have too much fun at those meetings and star parties—astronomy is supposed to be serious.
6. I might feel guilty saving money on *Astronomy* and *Sky & Telescope* publications while everyone else has to pay the full price.
5. There's too many people in astronomy already—going to those public star parties only encourages more people to become interested.
4. Don't mind meeting new people at star parties, but I can never figure out who they were in daylight!
3. Learning about new comets and other events is OK for some people, but I'd rather get the complete story in *Astronomy* and *S&T* after they have occurred.
2. Looking through other people's scopes really isn't that much fun.
1. Don't want to miss a single episode of Beverly Hills 90210!

Seriously, the \$20 you spend on your EVAC membership will be one of the best astronomy investments you will make this year. For the price of an average astronomy book, you can have:

- * An informative monthly newsletter with articles from EVAC members and many other sources.
- * Monthly meetings with interesting guest speakers and an opportunity to talk astronomy with other club members.
- * Monthly deep sky and local star parties.
- * Opportunities to share your interest in astronomy with the public.
- * Friendly people who are willing to help you out with advice on equipment and observing.

Don't delay—renew your membership today!

ANOTHER VEKOL TALE
by Sam Herchak

With the expected peak of the Leonid meteors occurring the Friday night of November 17th, several EVAC members gathered at Vekol Road the day before the monthly deep sky star party. This is a short account of that one night.

Just before sunset, Frank Honer and I joined Tom Polakis in setting up his new 20" Dobsonian by Schwaar. This would be Tom's first night out with this scope and we were all anxious for darkness to arrive. Pierre Schwaar and Paul Dickson arrived just before dark and in time to catch the breathtaking view of Comet Schwassman-Wachmann 3 skimming M55, less than 10 arcminutes away! This comet continues to dazzle, being much brighter than predicted and having a long lived tail.

The air turned out to be quite transparent and the views of the Veil and Crescent Nebulae through the 20" were astounding. The tremendous number of background stars in this portion of the Milky Way are finally resolved with this size aperture. Seeing got good later as well, allowing gorgeous views of Saturn at 300X. The Sun would pass through the ring plane in just another day, but the rings were still clearly visible through a 13".

After midnight, it became obvious we would not be treated to a meteor storm this year (the Orionids actually put on a better show at the All-Arizona Star Party in October). So most of the group set their alarms and caught a nap before the early AM pass of the Mir/Shuttle combination.

At about 5:25 AM, just as everyone was climbing out of their sleeping bags, a brilliant Leonid (-6 magnitude) lit up the sky! It's ionized trail through the atmosphere was still visible 5 minutes later! Nice timing.

The finale came only moments later when the now undocked Shuttle preceded the brighter Mir (-1 magnitude) by a few degrees in a long, high arc across the sky. Since it was now about 40 degrees Fahrenheit, once the duo faded in the northeast, we all jumped back in our bags! Weeks later I found out Tom missed both the fireball and the satellites that morning—it seems we all assumed he was already up. Sorry Tom.

Not every night has so many events, but if you haven't been to a dark site recently, try to make the next deep sky star party (weather permitting)—Vekol Road won't disappoint you!

LEONID FIREBALL
from Frank Honer

Frank picked this up off the Internet. Perhaps my previous description doesn't quite do it justice:

Driving south of Phoenix AZ at 0528 MST on 11/17/95, I saw a MASSIVE fireball in the southern sky (mid-way between the Moon and Orion). After an initial "flash" that was near full moon magnitude was the first thing that I saw [sic]. Shocked, I pulled over to the side of the dark country road. What remained was a long descending trail that began about 40 degrees above the horizon and ended about 20 degrees above the horizon. The trail took FOUR MINUTES (until 0532) to disappear. I was blown away by this sight! It was by far the most awesome celestial sight of my life. About 15 minutes later, I arrived at my destination. My friend that I was supposed to meet there arrived shortly thereafter. His first words to me were "I just saw the most incredible thing..." His observation matched mine down to the minute. Did anyone else observe this fireball? cbarger@indirect.com

FIRST CLEAR EVIDENCE OF BROWN DWARF
forwarded by Paul Dickson from the Internet

Astronomers have made the first unambiguous detection and image of an elusive type of object known as a brown dwarf. The brown dwarf, called Gliese 229B (GL229B), is a small companion to the cool red star Gliese 229, located 19 light-years from Earth in the constellation Lepus. Estimated to be 20 to 50 times the mass of Jupiter, GL229B is too massive and hot to be classified as a planet as we know it, but too small and cool to shine like a star. At least 100,000 times dimmer than Earth's Sun, the brown dwarf is the faintest object ever seen orbiting another star.

"This is the first time we have ever observed an object beyond our Solar System which possesses a spectrum that is astonishingly just like that of a gas giant planet," said Shrinivas Kulkarni, a member of the team from Caltech. Kulkarni added that "it looks like Jupiter, but that's what you'd expect for a brown dwarf." The infrared spectroscopic observations of GL229B, made with the 200-inch Hale telescope at Palomar, show that the dwarf has the spectral fingerprint of the planet Jupiter—an abundance of methane. Methane is not seen in ordinary stars, but it is present in Jupiter and other giant gaseous planets in our Solar System.

The Hubble data obtained and analyzed so far already show the object is far dimmer, cooler (no more than 1,300 degrees Fahrenheit) and less massive than previously reported brown dwarf candidates, which are all near the theoretical limit (eight percent the mass of our Sun) where a star has enough mass to sustain nuclear fusion. Brown dwarfs are a mysterious class of

long-sought objects that form the same way stars do, that is, by condensing out of a cloud of hydrogen gas. However, they do not accumulate enough mass to generate the high temperatures needed to sustain nuclear fusion at their core, which is the mechanism that makes stars shine. Instead brown dwarfs shine the same way that gas giant planets like Jupiter radiate energy, that is, through gravitational contraction. In fact, the chemical composition of GL229B's atmosphere looks remarkably like that of Jupiter.

The discovery is an important first step in the search for planetary systems beyond the Solar System because it will help astronomers distinguish between massive Jupiter-like planets and brown dwarfs orbiting other stars. Advances in ground- and space-based astronomy are allowing astronomers to further probe the "twilight zone" between larger planets and small stars as they search for substellar objects, and eventually, planetary systems.

Astronomers suspect that the brown dwarf developed during the normal star formation process as one of two members of a binary system. They cannot yet fully rule out the possibility that the object formed out of dust and gas in a circumstellar disk as a "super-planet" however. Astronomers say the difference between planets and brown dwarfs is based on how they formed. Planets in the Solar System are believed to have formed out of a primeval disk of dust around the newborn Sun because all the planets' orbits are nearly circular and lie almost in the same plane. Brown dwarfs, like full-fledged stars, would have fragmented and gravitationally collapsed out of a large cloud of hydrogen but were not massive enough to sustain fusion reactions at their cores.

EDITOR'S NOTE: The press release was highly condensed for the newsletter. Full GIF/JPEG images, captions, and press release text are available via World Wide Web at URL:

<http://www.stsci.edu/pubinfo/PR/95/48.html>

or via links in

<http://www.stsci.edu/pubinfo/Latest.html>

<http://www.stsci.edu/pubinfo/Pictures.html>

Note: Space Telescope Science Institute press release text and other information are available automatically by sending e-mail to listserv@stsci.edu. In the body of the message (not the subject line—put a space there) type the words "subscribe pio Name." Don't use quotes or user/account names, i.e., someone named Jane Doe would type: subscribe pio Jane Doe. The system will reply with a confirmation via email of each subscription. E-mail will be received with new press releases.

THE CALDWELL CATALOG—FIRST REVISIONS

by Tom Polakis

Any time somebody puts together a catalog of their favorite non-Messier objects, I begin second guessing it immediately. But when that person is somebody who was doing amateur astronomy before I was born, I knew that I needed to be careful in modifying the list. Patrick Moore has compiled "The Caldwell Catalog," published in the December 1995 issue of *Sky & Telescope*. The catalog is Patrick Caldwell-Moore's compilation of 109 objects that may be neglected because they are not in Messier's list. The objects are organized in descending order of declination. Unlike Messier's list and many since, the objects are uniformly distributed for viewing in both hemispheres.

Back to the subject of second guessing. I couldn't help but feel that some of my favorite objects had been 'slighted.' I went through the exercise of spiraling through bands of declination on the star charts, picking off just such favorites. It was easy to add nearly fifty objects to Moore's list. But it was not going to be easy to remove that number of Caldwell objects. Thus, I carefully pared twenty objects out of the catalog, leaving room for what I considered to be the same number of definite improvements.

Only a couple systematic problems with the Caldwell Catalog are evident. First, there seems to be a bias toward observations made before the advent of nebula filters. How else could objects as interesting as NGC 2359 (The Duck Nebula) or the Gum Nebula be excluded? Also, there was a tendency to give up on galaxies in the low Southern sky. In fact, a few of the sky's most spectacular spirals reside not in Ursa Major, but in such 'foreign' constellations as Dorado and Volans. Of course adding some of the Southern sky's showpiece galaxies means eliminating clusters and nebulae from the spectacular reaches of Crux and Carina—no easy task.

Listed below is twenty omissions from the Caldwell Catalog and twenty objects that had to go in order to keep the total at 109. An additional 28 objects of mine that didn't make the cut are also included. My additions are also ordered in decreasing declination. I tried to keep the emphasis on covering the entire sky uniformly, and made every attempt not to include personal favorites, like Leo I, that would become unfairly challenging in light polluted skies. Since every deep-sky observer has their very own 'Caldwell' list, I welcome additions. But remember, you need to somehow keep the total at 109!

There are really only a few glaring omissions in the Caldwell Catalog. NGC 7789 is a beautiful collection of over a hundred stars in Cassiopeia with swirling dark lanes. The classic example of a barred spiral galaxy is found in NGC 1365. Two bright arms radiate from the end of a prominent central bar. The Gum Nebula comes alive with nebula filters, showing intricate laces of nebulosity over many one-degree fields. Finally, NGC 2808 has to be one of the sky's prettiest globulars. Thousands of 14th magnitude stars are jammed into this small cluster.

Additions	Deletions (C#)	Considered, not added
NGC 1501	NGC 559 (8)	NGC 7822
NGC 7789	NGC 7243 (16)	NGC 2366
NGC 7008	NGC 5005 (29)	NGC 4236
NGC 1514	NGC 4559 (36)	NGC 281
NGC 2371-2	NGC 6885 (37)	NGC 5907
NGC 2903	NGC 3626 (40)	NGC 4111
NGC 4762	NGC 7006 (42)	NGC 7027
B143	NGC 6394 (47)	NGC 7640
NGC 6572	NGC 2775 (48)	NGC 404
NGC 1535	NGC 2360 (58)	NGC 1023
NGC 2359	NGC 4039 (61)*	NGC 1499
B86/NGC 6520	NGC 5694 (66)	NGC 6894
NGC 1365	NGC 300 (70)	Jones 1
NGC 2997	NGC 6124 (75)	NGC 6210
Gum Nebula	NGC 6352 (81)	NGC 6781
NGC 1566	NGC 5823 (88)	IC 430
NGC 1672	NGC 2867 (90)	NGC 6712
NGC 2442	NGC 4609 (98)	NGC 1360
NGC 2808	NGC 6101 (107)	NGC 3109
NGC 346	NGC 4372 (108)	NGC 5897
		NGC 6907
		NGC 2818
		NGC 3621
		IC 5148
		NGC 7090
		NGC 1313
		NGC 1466
		NGC 2899

* The Double Cluster is considered one Caldwell object, so one of "the Antennae" galaxies is eliminated.

KITT PEAK CLOSURE
from Dean Ketelsen
Tucson Amateur Astronomy Association

In mid-November, a small article in the paper caught my attention, so I emailed Dean Ketelsen at the Steward Mirror Lab in Tucson for details. Here's what happened:

Yes, the Mayall 4 meter is closed until 28 December (that is the date I heard). The big gearbox that drives the shutter stripped a few gears and since it was a one-of-a-kind, took a big effort to rebuild. I think it surprised everyone that it failed. Of course, if they had any warning they would have taken care of it during the summer shutdown.

Dean also sent these comments on the current projects at the Lab (which EVAC toured with Dean in August):

I am in the middle of fine grinding on the 6.5 meter. Using 20 micron abrasive, we have cut down surface errors from about 100 microns P-V (*peak to valley*) to less than 10 using an IR (*infrared*) interferometer that can be used on the ground surface. I'm hoping to be polishing by February or so and to be done by Riverside (*May*) or Grand Canyon (*June*) time. They just started mold construction on the 8.4 meter and I believe I overheard someone say casting will be next fall.

PAS WEB PAGE
from Terri Renner
Phoenix Astronomical society

Check out the new Web Page for meetings, star parties and other fun events. Remember, WE ARE ALL STAR STUFF!! The URL is:

<http://www.primenet.com/~ranger/pas/pastime.htm>

ADOPT-A-SITE
by Sam Herchak

Our Florence Junction site has been immensely popular at night with our Club members. It offers good skies in less than an hour for many of us. From the amount of trash and shells laying around though, it is apparently popular with other people during the day as well. With the exception of some smokers and their cigarette butts, I have never seen our members leave anything behind. But as a community service, I'm organizing an "Adopt-A-Site" cleanup for December 16th, our next local star party. If you would like to help, please show up a little early with a trash bag and a pair of gloves. The desert in that area is much prettier without all the litter. Thank you.

DARKS AT A GLANCE
by Bernie "Kentucky Fried" Sanden

No moonlight and no twilight. Add clear skies and you have the essentials for a great deep sky observing session. So when can I observe on any particular night? Predicting clear skies a month in advance is beyond rocket science at the moment. Fortunately, the interplay between the seasons, the lunar cycle, and our location on Earth dictates the time between twilight and the appearance of the Moon on any given night.

Using a home computer and Carina Software's Voyager II desktop planetarium, I fed nightly twilight and moonlight information for the Phoenix area into an Excel spreadsheet. A simple daily table resulted which displays the times for the start and end of dark with corresponding shaded bars whose length depict the length of the nightly dark period. At the request of Sam Herchak, I am providing it as part of the monthly EVAC Calendar. I will probably modify it over time to better suit the format of the newsletter.

I only include a 17 or 18 day period straddling the upcoming New Moon (which starts four or five days past Full Moon), when the nightly dark period grows beyond two hours. The last day in the run of darks is generally a day or two prior to First Quarter, when the dark starts around 11 PM. This selection favors those who start observing before midnight. If there appears to be room enough in future newsletters, I can include all nights with dark periods over two hours. Here are the details of the chart:

The chart lists Phoenix local time for start of dark (either EOT: end of twilight or MR: moonset), end of dark (either MR: moonrise or SOT: start of twilight), and total dark hours for the night. Monday night refers to the night which starts on Monday and ends Tuesday morning. Also, twilight refers to "astronomical" twilight, which starts and ends when the Sun is 18 degrees below the local zero-degree horizon. To elaborate on the viability of using astronomical twilight as the start or end of dark must be saved for another article. Be aware that some useful observing can be done several minutes into twilight. Also be aware that a slender crescent Moon may detract only minimally from deep sky observing. The times listed in the chart are meant primarily as guides to help you plan your outings—I hope you find them useful.

FOR SALE

Meade 8" SCT, model 2080 LX5. Used 8 times. 8X50 finder, 25mm Super Plössl, 8.8mm, and 14mm Meade Ultra-Wide eyepieces. Two polarizing filters. Have original packaging and instructions. \$1600.00 OBO. Contact Kirk Jackson at 821-7804.

EMBRYONIC STARS EMERGE

From: baalke@kelvin.jpl.nasa.gov (Ron Baalke)
Newsgroups: sci.space.news

Dramatic new pictures from NASA's Hubble Space Telescope show newborn stars emerging from dense, compact pockets of interstellar gas called evaporating gaseous globules (EGGs). Hubble found the "EGGs," appropriately enough, in the Eagle Nebula (M-16), a nearby star-forming region 7,000 light-years away in the constellation Serpens. "For a long time astronomers have speculated about what processes control the sizes of stars—about why stars are the sizes that they are," says Jeff Hester of Arizona State University. "Now we seem to be watching at least one such process at work right in front of our eyes."

Pictures taken by Hester and co-investigators with Hubble's Wide Field Planetary Camera-2 (WFPC2) resolve the EGGs at the tip of finger-like features protruding from monstrous columns of cold gas in the Eagle Nebula. The columns—dubbed "elephant trunks"—protrude from the wall of a vast cloud of molecular hydrogen, like stalagmites rising above the floor of a cavern. Inside the gaseous towers, which are light-years long, the interstellar gas is dense enough to collapse under its own weight, forming young stars that continue to grow as they accumulate more and more mass from their surroundings. Hubble gives a clear look at what happens as a torrent of ultraviolet light from nearby young, hot stars heats the gas along the surface of the pillars, "boiling it away" into interstellar space—a process called "photoevaporation." The Hubble pictures show photoevaporating gas as ghostly streamers flowing away from the columns. But not all of the gas boils off at the same rate. The EGGs, which are denser than their surroundings, are left behind after the gas around them is gone. "It's a bit like a wind storm in the desert," said Hester. "As the wind blows away the lighter sand, heavier rocks buried in the sand are uncovered. But in M16, instead of rocks, the ultraviolet light is uncovering the denser egg-like globules of gas that surround stars that were forming inside the gigantic gas columns."

Some EGGs appear as nothing but tiny bumps on the surface of the columns. Others have been uncovered more completely, and now resemble "fingers" of gas protruding from the larger cloud. (The fingers are gas that has been protected from photoevaporation by the shadows of the EGGs). Some EGGs have pinched off completely from the larger column from which they emerged, and now look like teardrops in space. By stringing together these pictures of EGGs caught at different stages of being uncovered, Hester and his colleagues from the Wide Field and Planetary Camera Investigation Definition Team are getting an unprecedented look at how stars and their surroundings appear before they are truly stars. "This is the first time that we have actually seen the process of forming stars being uncovered by photoevaporation," Hester emphasized. "In some ways it seems more like archaeology than astronomy. The ultraviolet light from nearby stars does

the digging for us, and we study what is unearthed." "In a few cases we can see the stars in the EGGs directly in the WFPC2 images," says Hester. "As soon as the star in an EGG is exposed, the object looks something like an ice cream cone, with a newly uncovered star playing the role of the cherry on top." Ultimately, photoevaporation inhibits the further growth of the embryonic stars by dispersing the cloud of gas they were "feeding" from. "We believe that the stars in M16 were continuing to grow as more and more gas fell onto them, right up until the moment that they were cut off from that surrounding material by photoevaporation," said Hester.

This process is markedly different from the process that governs the sizes of stars forming in isolation. Some astronomers believe that, left to its own devices, a star will continue to grow until it nears the point where nuclear fusion begins in its interior. When this happens, the star begins to blow a strong "wind" that clears away the residual material. Hubble has imaged this process in detail in so-called Herbig-Haro objects. Hester also speculated that photoevaporation might actually inhibit the formation of planets around such stars. "It is not at all clear from the new data that the stars in M16 have reached the point where they have formed the disks that go on to become solar systems," said Hester, "and if these disks haven't formed yet, they never will." Hester plans to use Hubble's high resolution to probe other nearby star-forming regions to look for similar structures. "Discoveries about the nature of the M16 EGGs might lead astronomers to rethink some of their ideas about the environments of stars forming in other regions, such as the Orion Nebula," he predicted.

GIF and JPEG images, captions and press release text are available via World Wide Web at URL

<http://www.stsci.edu/pubinfo/PR95/44.html>

or via links in:

<http://www.stsci.edu/Latest.html> and

<http://www.stsci.edu/pubinfo/Pictures.html>.

EDITOR'S NOTE: This news and imagery just released to the public was presented to Club members by "co-investigator" Dr. Paul Scowen at the May EVAC meeting.

CALENDARS

All of the orders placed by Club members have been sent in with the exception of the *Astronomical Calendar* by Guy Ottewell, who hasn't given me a delivery date or price for the Club. All the other calendars are in. Please bring a check made out to EVAC or exact change to pick up your orders. Prices include shipping. Sorry, but no IOU's.

<i>Observer's Handbook</i>	\$11.00
<i>Exploring the Universe</i>	5.50
<i>Wonders of the Universe</i>	12.00
<i>Astro&Space Weekly</i>	10.00

NOVAK SHUTDOWN UPDATE

From: santryl@cadvision.com (Mark Kaye)

I wish to correct an earlier statement. I let a usually reliable source hasten my posting without confirmation. I sent off for a catalogue from Kenneth Novak and Company and I received one promptly. So, it would appear that my rumour about their retiring was false. I am happy to say that they are still kicking and I wish I had just kept my big mouth shut. Clear skies. MK

Editor's Note: Kenneth Novak & Company hasn't been filling orders but not because of his retirement as suggested on the Internet. I was successful in contacting Ken and here is the real story:

The word from Mr. Novak himself is the company is still alive and well but has been dealing with numerous supplier problems. It seems with the somewhat healthy economy in the United States, suppliers don't want to bother with small businesses. Aluminum stock bar for his spiders has been on order for 15 months now! He's also had problems getting springs and fasteners. His paint supplier changed, without notice, the flat black paint to something less durable. It turns out the old paint that worked so well is no longer manufactured so he's trying to come up with an alternative. At the same time, large aperture telescope making has picked up around the world increasing the demand for his products. Rest assured he is still in business and dealing with these problems, but is currently behind in filling orders. Call Ken weekday afternoons at (715) 532-5102 if you need information on an order.

HOLIDAY THANKS

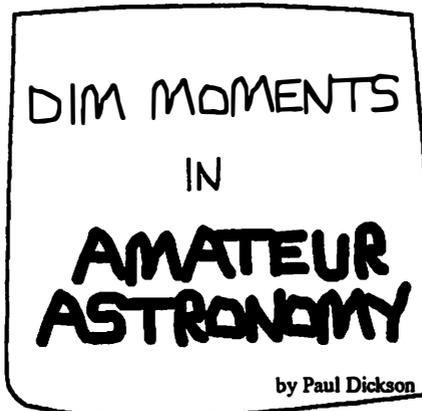
by Sam Herchak

I was very fortunate in 1995—I got to be the newsletter editor for a great group of people in a really terrific astronomy club! I got to serve with a bunch of hard working officers like Don Wrigley, Robert Kerwin, Sheri Cahn, and Steve O'Dwyer. I got to work with a bunch of long time supporters like Bill Smith, Dick Simmon, and Ted Heckens. I got to work with some newer, but equally strong supporters like Manfred and Diane Alber, Kirk Keating, Silvio Jaconelli, Bob and Jane Kearney, and Jim Waters. I got to learn from highly skilled observers, recognized throughout the country, like Tom Polakis, Pierre Schwaar, and Bernie Sanden. I got lots of material to publish from those already mentioned, but also from great people like Paul Dickson, Frank Honer, Bill Dellinges, Mike Sargeant, Art Zarkos, and Rob Smalley. Through guest speakers and activities I got to meet and learn from experts like Brian Skiff, Paul Scowen, Dean Ketelsen, John Dobson and Ken Edgett. What a year!

Thanks for making it a great year.

Have a Happy and Safe Holiday Season!

Look forward to another terrific year in amateur astronomy in 1996.



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26 *Moonset 9:58 PM	27 *Moonset 11:03 PM	28 *Moonset next day	29 *Moonset 12:08 AM	30 *Moonset 1:09 AM	1 *ALL MONTH NOTES	2
3	4	5	6	7 *GALILEO PROBE *7:00 PM PAS Mtg	8 *8:58 PM Occ	9
Sunset 5:20 PM		Sunrise 7:17 AM				
10	11 *3:01 AM Algol at min	12	13 7:30 PM EVAC Mtg *Geminid meteors peak	14 *11:50 PM Algol at min	15 *7:00 PM Sch-Wach 3 Conj	16 Local S Parties *4:02 AM Occ *8:39 PM Algol at min
17	18 *4:43 AM Occ	19 *7:00 PM Venus/Uranus Conj	20 *7:00 PM Venus/M75 Conj	21 *7:00 AM Old Moon	22 *Winter Solstice *5:25 PM Young Moon	23 Deep Sky S P *2:00 AM Ursid Meteors *7:00 PM Mercury/Mars Conj
Sunset 5:23 PM		Sunrise 7:27 AM				
24 *6:47 PM AM Occ	25 *9:00 PM Kreusa/NGC 2266	26 *9:32 PM Near Graze Occ	27	28 *Theta 1 Orionis A	29	30
31 *4:45 AM Algol at min	1	2	3	4	5	6 

Date	Start	Title	Description
12/1/95	12:00 AM	ALL MONTH NOTES	CALENDAR NOTES: For Occultation details (Occ), see the "1995 Occultation predictions for Phoenix" in the Feb EVAC Newsletter. PLANETS: MERCURY can be found low in the evening sky but is very difficult. VENUS is bright and unmistakable in the SW sky at sunset. MARS is very low in the SW sky at sunset as it heads for conjunction with the Sun in March 1996. JUPITER is no longer visible. In conjunction with Sun on December 18th. URANUS and NEPTUNE both are low in the SW sky at sunset. PLUTO rises shortly before the Sun now but is a difficult target. See Sky&Telescope (S&T) and Astronomy (Astro) for more details.
12/7/95	12:00 AM	GALILEO PROBE	Galileo probe enters Jupiters atmosphere on it's fatal mission to send back data.
12/7/95	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.
12/13/95	11:00 PM	Geminid meteors peak	Geminid meteors peak following morning but Moon is also up by then. Observe late tonight. Zenith hourly rate 95.
12/15/95	7:00 PM	7:00 PM Sch-Wach 3 Conj	Comet Schwassman-Wachmann 3 passes within a half degree of globular cluster M30 in Capricornus
12/19/95	7:00 PM	7:00 PM Venus/Uranus Conj	Venus, Uranus, and M75 form a triangle about 1 degree long each side.
12/20/95	7:00 PM	7:00 PM Venus/M75 Conj	Venus approaches within 20 arcminutes of M75
12/21/95	7:00 AM	7:00 AM Old Moon	Possible Old Moon sighting before sunrise. See Dec S&T
12/22/95	5:25 PM	5:25 PM Young Moon	Possible Young Moon sighting after sunset. See Dec S&T.
12/23/95	2:00 AM	2:00 AM Ursid Meteors	Ursid meteors peak. Zenith Hourly rate 20.
12/23/95	7:00 PM	7:00 PM Mercury/Mars Conj	Mercury and Mars only 1 degree apart below crescent Moon.
12/24/95	12:00 AM	6:47 PM AM Occ	Graze line of SAO 146402 nearby. See EVAC Occultation predictions.
12/25/95	9:00 PM	9:00 PM Kreusa/NGC 2266	Asteroid 488 Kreusa passes by open cluster NGC 2266 in Gemini. See Dec S&T for details.
12/28/95	7:00 PM	Theta 1 Orionis A	Variable star in Trapezium (found in M42) brightens from minimum. See Dec S&T.

DEC 1995

	START OF DARK	6:30	7P	7:30	8P	8:30	9P	9:30	10P	10:30	11P	11:30	12M	12:30	1A	1:30	2A	2:30	3A	3:30	4A	4:30	5A	5:30	6A	END OF DARK	TOTAL DARK		
SAT NITE	12/9 6:49 PM	EOT																									12/9 7:56 PM	MR	1:07
SUN NITE	12/10 6:49 PM	EOT																									12/10 8:49 PM	MR	2:00
MON NITE	12/11 6:50 PM	EOT																									12/11 9:42 PM	MR	2:52
TUES NITE	12/12 6:50 PM	EOT																									12/12 10:36 PM	MR	3:46
WED NITE	12/13 6:50 PM	EOT																									12/13 11:31 PM	MR	4:41
THURS NITE	12/14 6:51 PM	EOT																									12/15 12:28 AM	MR	5:37
FRI NITE	12/15 6:51 PM	EOT																									12/16 1:26 AM	MR	6:35
SAT NITE	12/16 6:51 PM	EOT																									12/17 2:26 AM	MR	7:35
SUN NITE	12/17 6:52 PM	EOT																									12/18 3:30 AM	MR	8:38
MON NITE	12/18 6:52 PM	EOT																									12/19 4:35 AM	MR	9:43
TUES NITE	12/19 6:53 PM	EOT																									12/20 5:42 AM	MR	10:49
WED NITE	12/20 6:53 PM	EOT																									12/21 5:59 AM	SOT	11:06
THURS NITE	12/21 6:53 PM	EOT																									12/22 6:00 AM	SOT	11:07
FRI NITE	12/22 6:54 PM	EOT																									12/23 6:00 AM	SOT	11:06
SAT NITE	12/23 7:45 PM	MS																									12/24 6:01 AM	SOT	10:16
SUN NITE	12/24 8:53 PM	MS																									12/25 6:01 AM	SOT	9:08
MON NITE	12/25 9:59 PM	MS																									12/26 6:02 AM	SOT	8:03
TUES NITE	12/26 11:03 PM	MS																									12/27 6:02 AM	SOT	6:59

EOT = End of Astronomical Twilight

MS = Moonset

MR = Moonrise

SOT = Start of Twilight

NOTE: Applicable to Phx Metro area. Times are Mountain Standard Time

Berrie Sanden 10/95