STARSCAN

Johnson Space Center
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Views from West Texas

Ken Lester

The Transit of Mercury: I hope you all had the opportunity to observe the transit of Mercury. I was all geared up to do so myself when I learned that I had to travel to San Angelo on business and would miss 1st and 2nd contact. I did arrive home before sunset and was able to observe Mercury's slow crawl across the face of the Sun. I was using a Coronado PST which gave a fine view of the action.

The Leonids: I got started observing the Leonids a little early this year. Early by a week in fact. I made full use of the November issue of Astronomy Magazine to zero in on the best date to observe. It was the issue whose Leonids article started out with a giant font size: "Get ready for the Leonids". Followed by a font that was nearly as large "During the night of November 12,...." with the rest of the article in smaller to normal sized font. If I had bothered to read the rest of the paragraph I would have learned that the date the paragraph was referring to…was 1833!

So near midnight on the 12th, I drug my house guest Kurt Maurer out to the middle of my back pasture near Fort McKavett to observe about 6 weak sporadic meteors. That was the night the rest of you were at the Haak Winery sharing the skies with the public, and enjoying the fruits of the vines.

Well, one week later Kurt had returned home and Lisa had arrived for a short visit. On the night of the 18th and she and I spent some time looking for zingers with no luck. We even got up around 4:30 to try again. Again, no luck. We later read reports from all over the world, the Leonids had fizzled.

All was not lost however. While watching for those faint streaks of light, I did notice something awesome. I've spent many a night under bad, good, and great skies; always with the same results. With the unaided eye, the colors of the stars were hardly noticeable. That night, the colors of the stars were absolutely brilliant! The reds especially popped out. Yellows were definitely yellow and I could even distinguish between whites and blue-whites. It took my breath away. I now wish I had endeavored to set up my scope for a better view.

A Family that Starhops Together, Sticks Together

By Connie Haviland

We rang in the New Year 2007 searching the heavens together as a family. Granted the moon was straight up in the sky, but that didn't stop us. In fact, John thought he would try his had at a little astrophotography and capture the moon with his digital camera.

Noticed how the moon changed positions? He was at this a while.

(L to R) Dave with computer and scope, Christy checking out the stars, John adjusting for M-42 and Connie looking for her next location to star hop

We were able to find a few things and kept warm by the outdoor fireplace. We toasted in 2007 with Haak's Pink Pelican, which we felt was very appropriate for a star party. Dave got to pull out his computer and work with it and his telescope a little bit.

It's Official!!!

By Connie Haviland

That's right everyone. It is official. John Cavuoti is the proud owner of his own new telescope. Santa heard rumors that he wanted his own scope and considering he hadn't been too naughty this year, granted his wish and delivered a brand new SkyQuest XT6 Classic Dobsonian scope. It included 2 Sirius Plössel eyepieces; a 25mm (48x) and a 10mm (120x). In addition, he got the bonus accessory pack, which had a 6 x 30 right-angle finder scope, LaserMate collimator and DeepMap star chart.

John was so excited to get out there and do some star-hopping, he didn't waste any time getting it put together. John and Dave [Haviland] sat on the living room floor and John learned more about his scope while the two of them put it together. And the skies were nice to them. It was perfect star-hopping weather. John got some time to search the sky for various planets and Messier objects. Among the things he found were M42, Saturn, and Betelgeuse. We even put our outdoor fireplace to work so that John and Dave could search the skies together. We are all excited for John and after spending some time with his scope, asked, "When are we going to Fort Mac?" Well, we will be seeing him this March setting up his own scope just like the rest of the club. Look for him there out on the field.

First Light With a New STL-11000

By Matt Hommel

I now have a whole new level of respect for all folks who successfully "CCD".

Here's how I spent the last 2 hours.

First I set up my scope figuring that I would do the alignment with an eyepiece in so that I could get through that step quickly. Then about half way through the alignment I realized that I needed to balance the scope with the camera on it.

I then switched off the scope and loaded the camera and counter weights and balanced the scope. I then proceded to hook up the wires.

First the power cable. Ooops I need a power strip.

I go get a power strip and plug everything into it. I then hook up a bunch of wires like the USB camera cable, the auto guider cable, the telescope interface cable.

Then I boot up the laptop. Naturally the telescope cable needs a Serial port so I got one of those USB to Serial adapters. Naturally it didn't work. Invalid Port. No sweat I have the autostar so the only thing I lost was the autofocus capability which I REALLY wanted to have.

I plug the camera into the computer and I was a bit disturbed when the fan didn't start humming as usual. I started MaximDL and attempted to connect to my tragically silent camera and got the error message something like "Camera not found".

I look down and finally deduce that the power strip I am using is in fact dead. So I get a different plug splitting implement and proceed.

Now the camera comes to life and Winblows XP tells me it has found a new device and would I like to look for the drivers. Of course I had installed the camera previously and had never had this problem so I argued, IN VAIN, with XP and finally reinstalled the drivers.

Now the camera was working and the scope sprang to life with the flick of a switch and my mood elevated as I finally began my alignment procedure in preperation for my first light.

How naive I am, sometimes.

The scope slewed to the first alignment point and I attempted to focus on the star. This was a real chore but I managed to stick with it. Strangely the star kept slewing out of the frame with the slightest adjustment. I realized, after more time than I will ever admit to, that I had the slew speed set too high and it was entirely my fault.

I finally got reasonable focus, the stars were round and didn't have a black circle in the center. Good enough for now. FWHM around 6.2: not great, but usable for now.

Off to the second alignment point. This took about 7 tries since I was in my driveway between two houses. Finally I managed to center the star and finish the alignment. Unbeknownst to me at the time, it was entirely the wrong star and my alignment was way off.

I then went for my first target. After no luck imaging anything but streaks from bad tracking as well as bad guiding (I have a lot to learn here), I decided to center something I could see in the finder. So off to the Pleaides.

I managed to get a few pics of a few of the stars here, but they were just luminance.

I decided at this point to try refocusing, as I noticed that I never locked the mirror in place (ooops). I checked the Focus and the FWHM had slipped to around 13. This is bad. I started to refocus and took another test shot. I got FWHM of 1.2. I thought “wow that's good focus.” I then looked up and saw that every star had disappeared in less than a minute. Within another minute, the fog appeared and everything I had was covered in dew.

I got everything inside as fast as I could and dried everything off. I never got a usable shot.

I managed to learn a thing or two, but mostly I learned that this is not easy. When you see those top notch CCD images, take a moment to appreciate the effort as well as the beauty.

Cheers,
Matt.

Charlie’s Challenge

By Charles Hudson

Don Halter's son studied the biological effects of radiation in graduate school. He attended the November meeting and told me that when he was in school the following problem was discussed. I thought it might make an interesting Challenge item.

You are given a source of alpha radiation, a source of beta radiation, a source of gamma radiation, and a neutron source. You have to eat one, hold one in your hand, put one in your pocket, and throw one away. What do you do with each source?

I will give the answer in February.

PANOPAEA ASTEROID OCCULTATION WELL OBSERVED

Paul Maley

For those who had the time and will on a weekday night to make the trek north of Houston on December 13, everyone was treated to a big surprise. The predicted path for the occultation of an 8.6 magnitude star by the asteroid *(70) Panopaea* was nearly exactly as calculated. Normally we see a shift to the north or to the south by some number of miles but this path was virtually exactly as shown on my web page for occultation events.

Observers under the path from west Texas east to Louisiana and Mississippi and who did not experience clouds were able to watch an occultation that lasted up to nearly a maximum of 15 seconds. From the Houston perspective, skies were basically clear with cool temperatures and low humidity but the path was situated with the southern edge near Houston’s northern suburbs while the north edge was at Waco. The predicted width was about 124 km (75 miles). It is hard to believe that the asteroid was 174 million miles away at the time of the occultation (9:19pm).

In the graphic prepared by Richard Nugent, you can see the results which illustrate the outline of the asteroid as being roughly 129 x 137 km (80 x 85 miles). This is a model using an ellipsoid fitted to the data reported by 12 observers. Also listed are a few observers who saw no occultation denoted by the letter M. The numbers on the graphic shown as 3, 6 and 12 are where there were observers who reported no

occultation from their sites. Ten observers were coordinated from Houston and this was definitely the most successful occultation of 2006 for this area as far as I am concerned. I want to congratulate all those who made the 2.5 hour drive.

What also is interesting is that the appearance of the asteroid outline is nearly circular. No secondary occultations, potentially symbolic of an asteroid satellite, were reported but Pete Nolan did notice an anomalous brightening during the mid part of the occultation. *Panopaea* was 12.4 magnitude and so it is not at all understood why it would appear to brighten unless there was perhaps a cutout or notch in the lower portion of the outline. But he did not have a video record, so it was not possible to corroborate his observation. This is another reason that sometimes critical and unusual things seen during an occultation are best captured on video.

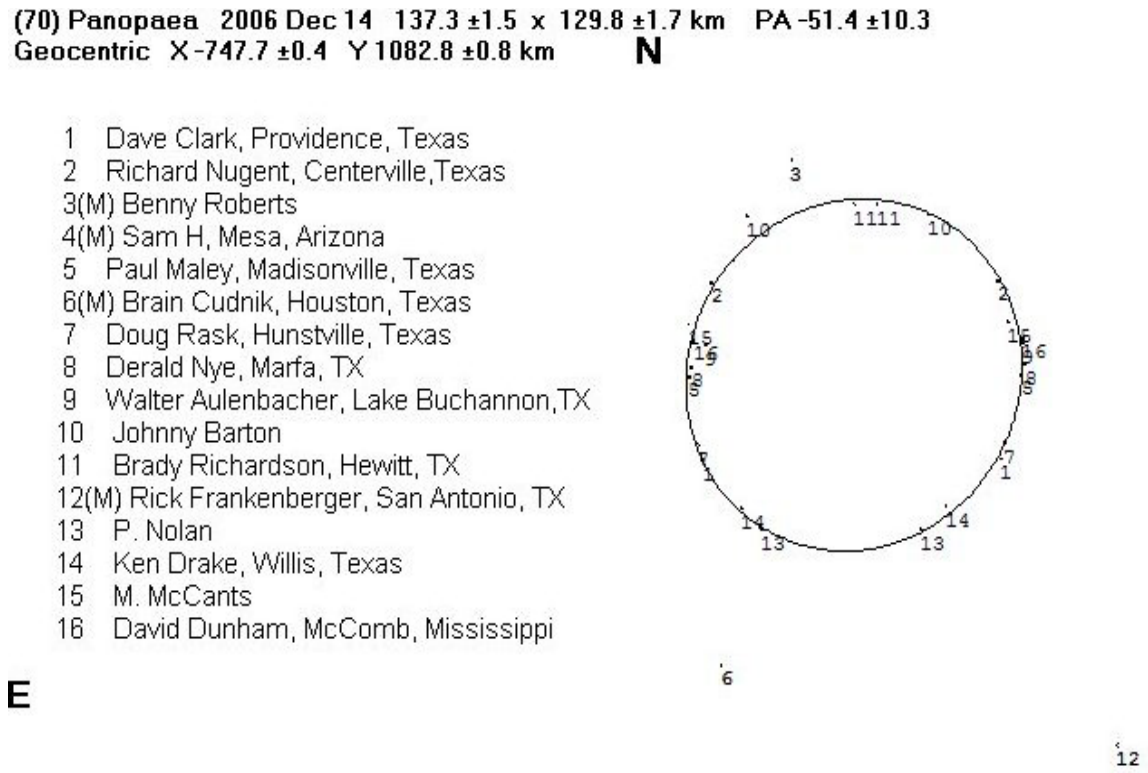
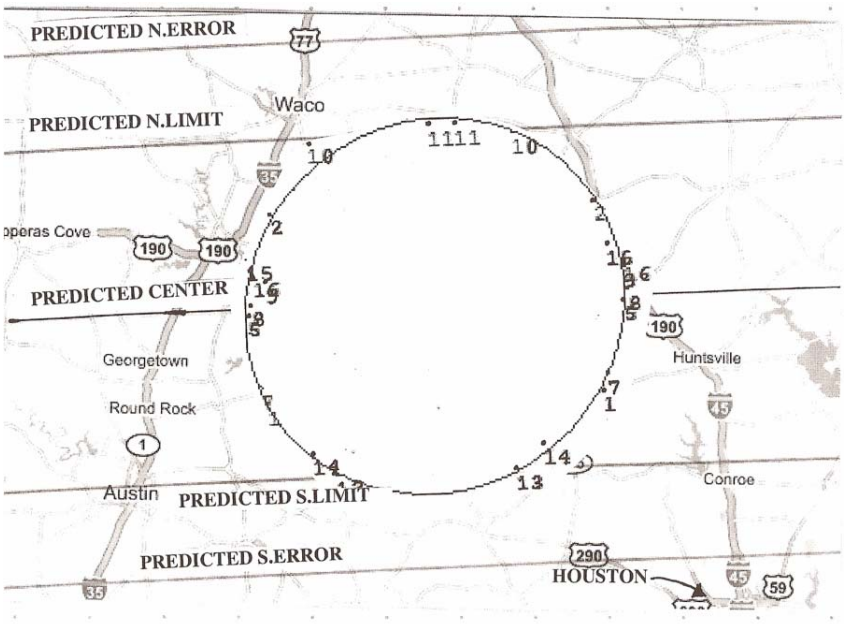


Figure 1. Diagram of occultation results by R. Nugent.

The most critical zones for the occultation are the two limits. Johnny Barton and Brady Richardson were both in the Waco area and I was able to notify them about a week before. It was the first success for both of these observers and they were luckily able to capture the top of the asteroid with occultation times of 1 second and 3 seconds, respectively. The closest observer to the southern edge of the asteroid was Pete Nolan, formerly living in Houston but who moved out to a place near Kerrville not long ago. The path of *Panopaea*, like some others recently, made an east-west crossing of the state and so Austin and Kerrville both were covered by the asteroid shadow.

I have attempted to overlay the asteroid shape based on the data on top of the predicted area over Texas between the two major highways where most observers were located as shown in figure 2. The asteroid was a little bigger than predicted so that it bulges out over both limit lines. Observers in Austin proper would have seen a brief occultation and could have helped define the southern limit.

A coronal mass ejection made reception of WWV harder than usual and one observer was able to receive the Canadian time signal station CHU on 7.333MHz with great clarity. Without accurate time signals it becomes very difficult and sometimes impossible to use an observation.



For future occultations we are finding that the typical magnitude of the star to be occulted is around +11 and so it is outside the reasonable range of many observers. However it is becoming increasingly easier to forecast the passage of such events far in advance. Lately, however, occultations of more and more dimmer stars are being predicted and the opportunities are increasing to time an occultation. If you wish to be added to the cadre of observers who are notified and wish to participate in this exciting discovery project, please send an email to me at pdmaley@yahoo.com.

Figure 2. Overlay of *Panopaea* over east/central Texas.

ASTEROID OCCULTATIONS FOR THE HOUSTON AREA LOOK-AHEAD: JANUARY 2007 THROUGH APRIL 2007

By Paul Maley

I have been looking ahead and want to provide JSCAS members with a list of interesting eclipses of star by minor planets that will be crossing the Houston area in the near future. Most of these require an 8-inch telescope or larger. As predictions are being refined, some stars even down to near 13th magnitude are being targeted. I have bolded those events which occur over the weekend.

You can find details on those events for which expeditions will be planned at http://www.eclipsetours.com/events

Your help is needed to define the shape and sizes of these ubiquitous solar system objects.

TUESDAY NIGHT 8.50pm JAN. 30 a 11.5 magnitude star is eclipsed by the asteroid Eukrate. Eastern part of Harris County is favored.

TUESDAY NIGHT 8.17pm FEB.20 a 12.5 magnitude star is eclipsed by the asteroid Pandora over Houston.

WEDNESDAY NIGHT 8.47 pm FEB.21 a 11.4 magnitude star is eclipsed by the asteroid Geldonia south of Houston.

THURSDAY MORNING 3.45am MARCH 8 a 11.3 magnitude star is eclipsed by the asteroid Loreley over a 96-mile wide path running from north of Houston to south of Dallas.

MONDAY NIGHT 7.30pm MARCH 12 a 12.0 magnitude star is eclipsed by the asteroid Arachne just north of Houston.

SATURDAY NIGHT 9.13pm APRIL 14 a 11.6 magnitude star is eclipsed by the asteroid Virtus just south of Houston.

Dennis Webb's Arp Book is Finally Out!

By Dennis Webb

In the June 2005 Starscan, I gave a status of my book on the Arp Peculiar galaxies:

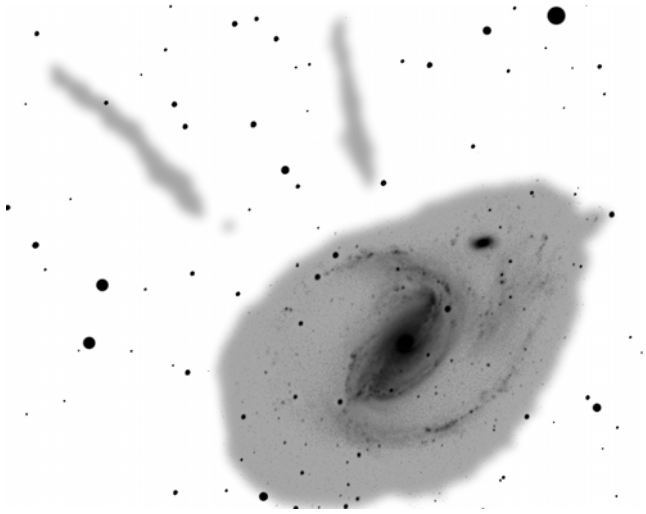
> *"About a year and a half ago, I got an email asking for help. Jeff Kanipe, astronomy author and editor, was writing a book for Willmann-Bell on Halton Arp and the 1966 Atlas of Peculiar Galaxies. The publisher thought it was a good idea to include some amateur astrophotos of the 338 peculiar views of peculiar galaxies. Jeff and I had known of each other's interest in the Arps (he spoke at the JSCAS a couple years ago) and he approached me to see if I could gather some images and contribute to the book. I jumped at the chance to work with Jeff and Willmann-Bell, as my dream has been to have a book published and I know something about the Arps. This would be a gentle introduction to the business. Within a couple months we decided we might be able to get amateur images of all 338 and turn it into a recreation of the Atlas. By New Years, I was promoted to coauthor and the game was on. The publisher asked us to keep the project quiet, to avoid declaring a book was coming out before we could see the end. I wanted to brag but kept quiet. As the work became bigger and bigger, it has taken over my astronomical life – I made no images between TSP2004 and TSP2005, and have made very few JSCAS meetings and events.*
>
> *"Through 2004, I recruited and negotiated a nearly complete set of great existing amateur astrophotos. Al Kelly (who led me into this imaging obsession) is contributing several, including some of his collaborations with Arne Henden of the USNO. Three imagers graciously agreed to shoot the remainder needed: Dick Miller, Chuck Shaw, and Paul Downing (FBAC, HAS, and NHAC). Barbara Wilson and Dave Tosteson are contributing visual observations. There are a lot of contributors (sometimes an overwhelming coordination task), and I have finally had to stop recruiting and make a book. I have reviewed about 1000 images. Both Paul and Dick have helped me manage the immense amount of data that will be presented – I thought my earlier researches were sufficient but we have had to research and validate the 800-odd galaxy references. At TSP 2004, publisher Perry Remaklus stopped by the JSCAS Harmony bunkhouse rustic reception area for a consultation and social with the gang. Still we had to keep the secret. The book is mostly done and we hope to have it out in the spring of '06. This book business is more complicated than it appears and finishing is an extended process.*
>
> *"Now the coincidences – Larry Mitchell was preparing his TSP2005 advanced observing list and since it was 10 years since Halton Arp appeared at the TSP, Larry thought it would be nice to feature a list of objects from the 1966 Atlas. I got an email from a guy who was helping Larry and he was seeking some updated Arp information relative to my stale website. I ran into Larry at Astronomy Day and followed up with a little more data. Larry had pestered Barbara Wilson to get Dr. Arp to come to the TSP but she had already booked speakers. I suggested that she call him for next year (TSP 2006), since the book would be out by then. She emailed Dr. Arp and by coincidence, he was going to be in the US during TSP2005 and said he would be delighted to stop by. Holy cow, was I excited. Publisher Perry gave Jeff Kanipe and me permission to announce the imminent book at the TSP – the secret can come out!"*

Finishing took longer than I expected but the book is finally coming out, being printed as this edition of the Starscan is being composed. Order by February 15, 2007 for a $5 discount at willbell.com!

Some stories since the 2005 report:

Randy Brewer added his contributions, including the remarkable image which shows three of the four strange optical jets in Arp 77 (NGC 1097). By the way, Richard Nugent gave a great talk on this strange galaxy and its jets a few years back at a JSCAS meeting Here is how I interpreted his data in the book

(two jets showing):



Randy Brewer, 14.5-inch f/6 Ritchey-Chretien, ST-10XME camera, 40 minutes of exposure, processed by Dennis Webb

We were missing a few visual observations and so we added a couple at Fort McKavett in fall of 2005 (I think), with Al Kelly, Jack Peterson, Chuck Shaw and Dick Miller peeking through my 17.5" dob, and shouting observations down to me. The final missing visual observation had to wait for Barbara Wilson at TSP 2006; she had Stephen James O'Meara's help.

Dick Miller applied his disciplined mind and observer sensibility to help me compile, integrate, and evaluate several sources of text material into the observing guide. The book would not have been possible without his cheerful help over two of the years.

I basically finished my work on the book in January 2006, but the process of making it into a book took the rest of the year. The publisher had worked with a special version of Megastar to build the star charts and I had tuned them up in the summer of 2005. To fit them on the page, the lettering had gotten too small so I had to tweak them all for us old guys with poor sight. In the spring of 2006, we decided we could manage enough pages to reprint the original Arp Atlas. We negotiated with the complex set of ownerships and non-ownerships of this unusual document; Halton Arp was pleased to grant his permission.

Barry Madore of CalTech (astronomer who built the online version of the atlas nearly 10 years ago), rescanned 8x10's of each Arp and I spent much of the summer of 2006 removing gradients and artifacts (including resolvable fingerprints from the original glass plates) to prepare them for republication. Interestingly, while most of the gradients were from the fresh scan, Arp's original atlas featured some unusual gradients, probably a process of pushing film data to the limit of its capability. Anyway, from late July through late August of 2006, I was grinding away on this remarkable dataset. I bought Russell Croman's GradientXterminator photoshop plugin and would not have survived without it. In any case, the feverish mousing of rotating, cropping, gradient correction and delicate artifact removal, resulted in great hand pain until Mrs. Webb suggested I use her hand brace and I was able to survive. This ergonometric computer stuff is real!

One fortunate event happened in the middle of this process. I have a nervous habit of googling "Arp Peculiar Galaxies" every few weeks to see what pops up. In July 2006, one of the search results turned up an Amazon listing for a copy of the Atlas itself. The Atlas was printed as these big photo prints in 1966 and a limited run in 1978, so this is a rare thing. The seller was an Amazon affiliate, Zubal Books, who deals in rare book. The price was more than I wanted to spend and I could not convince the publisher that he needed to buy it for me, so I sighed and got back to work. However, every few days I would go back to Amazon and stare at the ad. One day, however, I found it was marked down! Blue light special on Arp

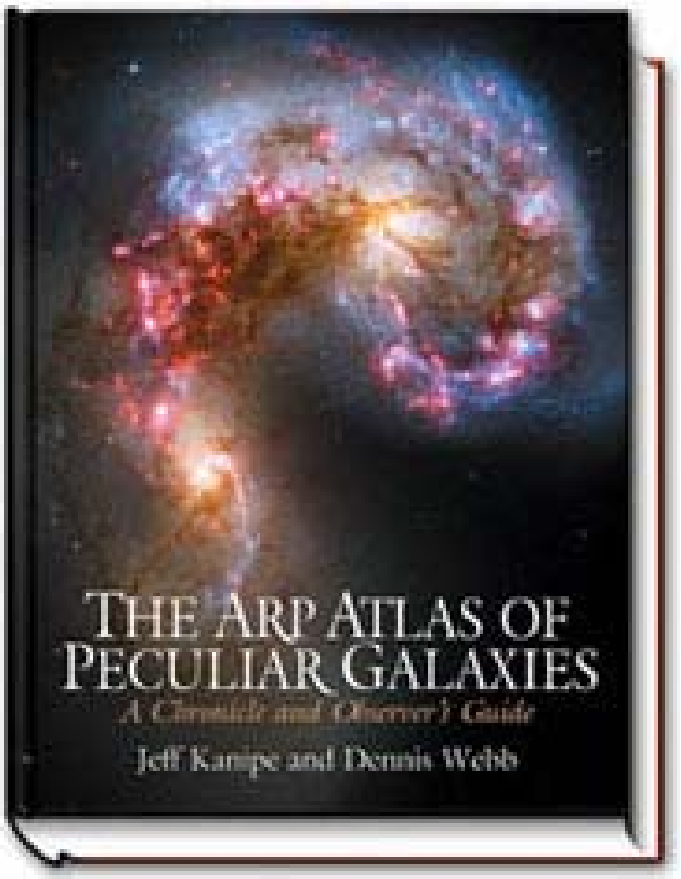
Atlas! It was some kind of celebration of an anniversary when Amazon started partnerships with independent booksellers. It was a sign from the universe. I bought it and when it showed up, it was very helpful. Bought an archival box to hold them and some white cotton gloves like the rare book people use. Wish I had bought one years ago although they are quite rare as they were mostly bought by universities and observatories, and generally are not resold. When I asked the Zubal folks where this copy came from, they said they had bought the Atlas from the estate of an independent researcher who had impeccable taste in science books. I am guessing it was from the 1978 reprinting, although the records are fuzzy.

Fall 2006 was tweaking the book to perfection. At least I thought perfection until the publisher sent it to some remarkable folks to review before we were done. One was my long time hero in scholarship of galaxy catalogs, another is a noted columnist for one of our main magazines, another is a noted researcher who works with amateurs a lot, another was an Arp collaborator and the last is a fellow I did not know. They found a lot of things that were unclear (or wrong) but it only took a couple months to get closer to perfection; fortunately, nothing was fundamentally wrong with our approach and the basic shape of the book stood the test. Then there is the matter of the Arp controversy. Co-author Jeff and I went into this with open eyes and we present some of the controversial ideas that Halton Arp is advancing. Some comments hinted we had drifted away from real science. Not really a problem for me but Jeff is a real science writer (his recent book *Chasing Hubble's Shadows* is a delightful and thoroughly researched story on the Hubble Ultra Deep Field implications for cosmology). Anyway after a few weeks of anxiety, frequent emails discussing paragraph revisions, we found our calm and moved on. Did we go to the darkside? Is the darkside really dark? Buy the book and find out! Whether we did or not, the book presents a methodical treatment of the history and observational characteristics of the 1966 Arp peculiar galaxies and it is a must for the serious observer! (sorry for the commercial)

In December 2006, the publisher thought we were done and sent it to the printer. Emailed sighs of relief. I am starting to work off 3 years of deferred maintenance around the house. Slowly updating my webpages which have been untouched since 2000. Thinking about working on some upgrades to my big dob and getting back into imaging.

The book is expected to be delivered late January 2007. JSCASers who choose to buy this 400 page book will be rewarded with an autograph and a hug from me (if you like hugs from Dennis). Yipee!

Dennis Webb, Halton Arp, and Jeff Kanipe, redshifted before the brick wall at TSP 2005, photo copyright 2005 by Jeff Rowe



Cover of the book featuring HST image of Arp 244

JSC 16" Telescope restoration status

By Andy Saulietis (AKA YODA

The JSC scope is functional now and can be operated remotely from Chuck Shaw's PC's. Servo control software has been installed and mount calibration is in progress. The scope optics are not yet fully collimated but useful images have been obtained. The secondary mirror focusing mechanism has been extensively repaired and re-worked, with a servo motor system for local and remote focusing, with auto-focus and 5 preset focal plane locations. A 3" 10x finder was installed, this can be used with a D-50 Nikon DSLR camera for remote ops. The D-50 has s/w to be operated remotely and can do time-lapse sequential imaging, updating at about 1 frame per 5 seconds.

Current tasks are to:

- work with Chuck Shaw and Dan Grey (the servo system designer) to finish calibrating the mount drive system and servo focuser. The scope's control system uses ASCOM to control virtually all pointing, tracking, guiding, and imaging functions.

- install a raised floor underneathe the deployable shelter, for better access and improved weather protection

- add a 10x zoom finder lens for remote use

- add a 20mw laser pointer for local use. It should also show the current location of the scope FOV using a separate all-sky camera, which is on order.

- add a 5x Barlow lens adapter for lunar/planetary imaging with a D-50 camera
- start taking test images of deep-sky and lunar/planetary objects.

Hopefully, when JSCAS folks can visit here, the scope will be fully operational and available for use in our dark high altitude skies!!

Photos of the restoration project to follow on next few pages. Additional Andy Saulietis photos may be found in the member's gallery.

JSC Telescope shelter, in stowed position. The shelter rides on two heavy drilling pipes, v-rollers on near side, straight rollers on far side. The straight rollers will be motorized for remote ops deployment/stowage

JSC Scope, in its shelter. The plywood at the top of the door is part of a stiffening structure to keep the open bottom side of the building from spreading. The doors will also have motorized remote open/close mechanisms, interlocked with the shelter deploy/stow system. Motors will run on 12vdc batteries for stow/close in event of a power failure.

JSC scope in its 'park' position. It's pointed at a dome on the other side of the valley and makes a recognizable landmark to re-align the mount.

JSC scope's 'park' position as seen thru the 3" finder

JSC 16" scope, focuser, and finder scope

JSC scope with STL-11000 CM camera installed. The FOV is about .5deg diagonally.

JSC scope with shelter deployed.

January 2007

By Chris Randall

★ **SSO**: (Solar System Objects) Summary for the 15 Jan 07

Object	Const	Mag	% Ill	Rise Time	Transit	Set Time
Sun	Sgr	-26.7	100	07:16	12:29	17:42
Moon	Cnc	----	97	19:00	01:14	08:21
Mercury	Sgr	-0.8	98	06:59	12:03	17:07
Venus	Sgr	-4.1	1	06:48	12:13	17:38
Mars	Ari	-0.2	90	12:45	19:33	02:18
Jupiter	Lib	-1.9	99	02:08	07:34	13:00
Saturn	Cnc	0.4	100	18:41	01:27	08:13
Uranus	Aqr	5.9	100	09:40	15:21	21:05
Neptune	Cap	8.0	100	08:31	13:56	19:24
Pluto	Ser	14.0	99	04:57	10:21	15:46

Highlighted times denote daylight events.

Lunar phases for January 07

Full	Third	New	First
3th 07:57	11th 06:45	18th 22:01	25th 17:01

Central Standard Time

★ **BSO**: (Bright Sky Objects)

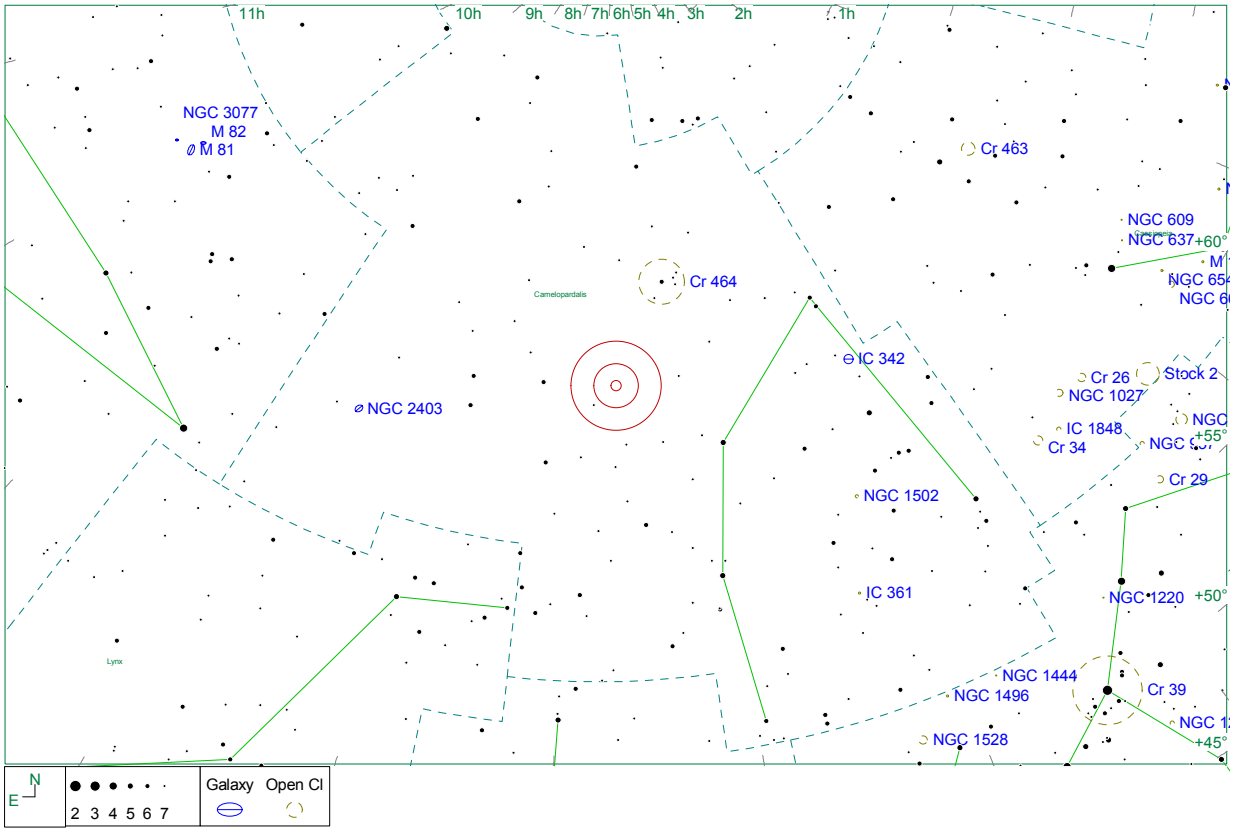
Mel 25 (Hyades, Cr 39, C-41) – Open Cluster in Taurus, Magnitudes 0.5, Size 333', Stars 50.
NGC 1502 (Cr 1502) – Open Cluster in Camelopardalis, Magnitude 6.9, Size 7', Stars 45.
IC 405 (C-31) – Bright Nebula in Auriga, Magnitude 6, Size 84' x 60'.
NGC 1746 (Cr 57, Mel 28) – Open Cluster in Taurus, Magnitude 6.1, Size 42', Stars 20.

★ **DSO**: (Dark Sky Objects)

NGC 2024 (Flame Nebula) – Diffuse Nebula in Orion, Magnitudes --, Size 30' x 22'.
NGC 1851 – Globular Cluster in Columba, Magnitude 7.2, Size 11'.
NGC 1535 – Planetary Nebula in Eridanus, Magnitude 9, size 60".
NGC 1499 (SH2-220)– Diffuse Nebula in Perseus, Magnitude ---, size 160' x 42'.

★ **CDMP:** (Chris' Don't Miss Pick)

Arp 184 (NGC 1961, IC 2133) – Galaxy in Camelopardalis, Magnitude 11.5, Size 4.5' x 2.9'.
Arp 184, NGC 1961 is a problematic galaxy. Its highly disturbed and asymmetric spiral arms would normally indicate an interaction or merger with another galaxy. However, no culprit is found to be the source of NGC 1961's angst. This galaxy is part of a group (of about 10 other smaller galaxies) around 171 million light years away. Given the apparent size and brightness of this galaxy- it must be one of the largest galaxies in our "local" universe. Astronomers have observed this galaxy from X-rays to radio wavelengths of light in order to unravel the mystery of this galaxy's morphology. One recent paper concludes that the shape of the galaxy may be due to its interaction with the gas in the cluster. Most of this galaxy is still producing young and massive stars that live short lives and die violent deaths as supernovae. The most recent explosion in this galaxy was observed in 2001.


11h
10h
9h
8h
7h
6h
5h
4h
3h
2h
1h
NGC 3077
M 82
M 81
Cr 463
NGC 609
NGC 637
+60°
Cr 464
Camelopardalis
IC 342
Cr 26
Stock 2
NGC 1027
NGC 2403
IC 1848
Cr 34
+55°
Cr 29
NGC 1502
IC 361
NGC 1220
+50°
Lynx
NGC 1444
NGC 1496
Cr 39
NGC 1528
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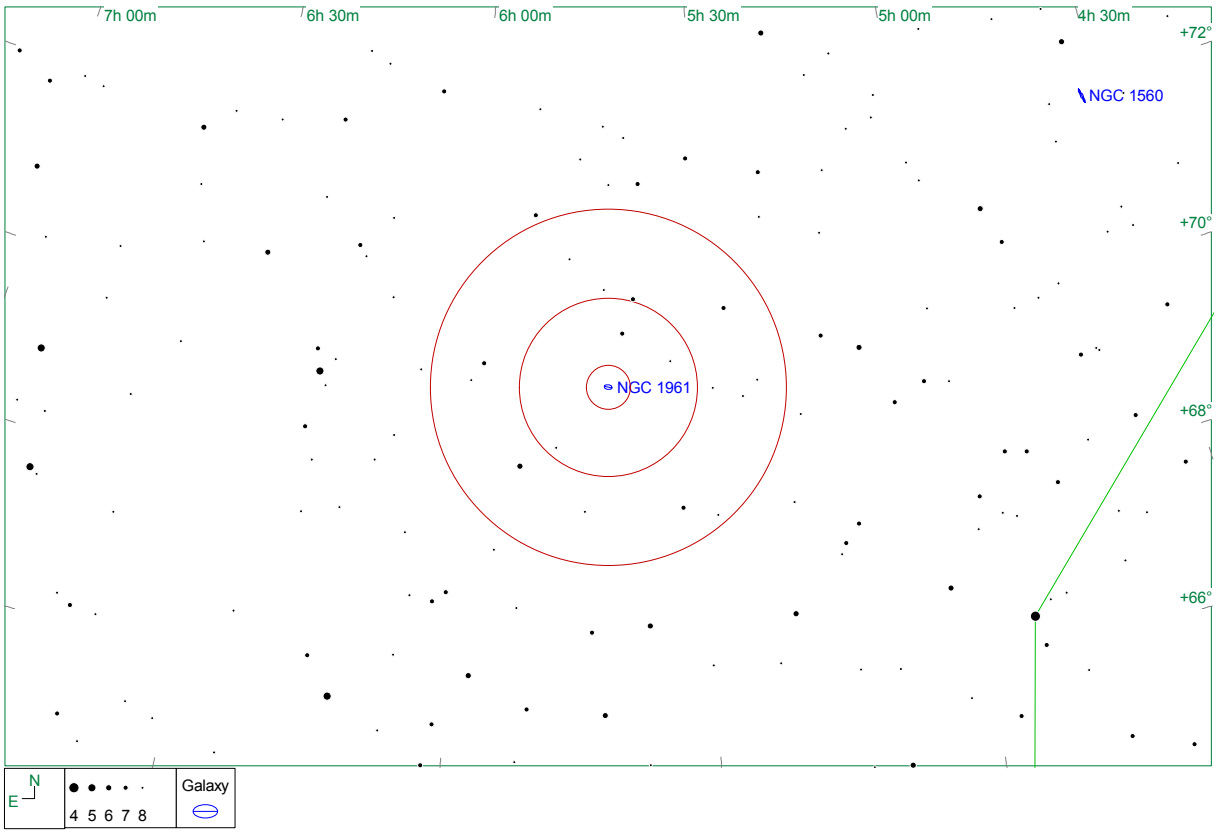
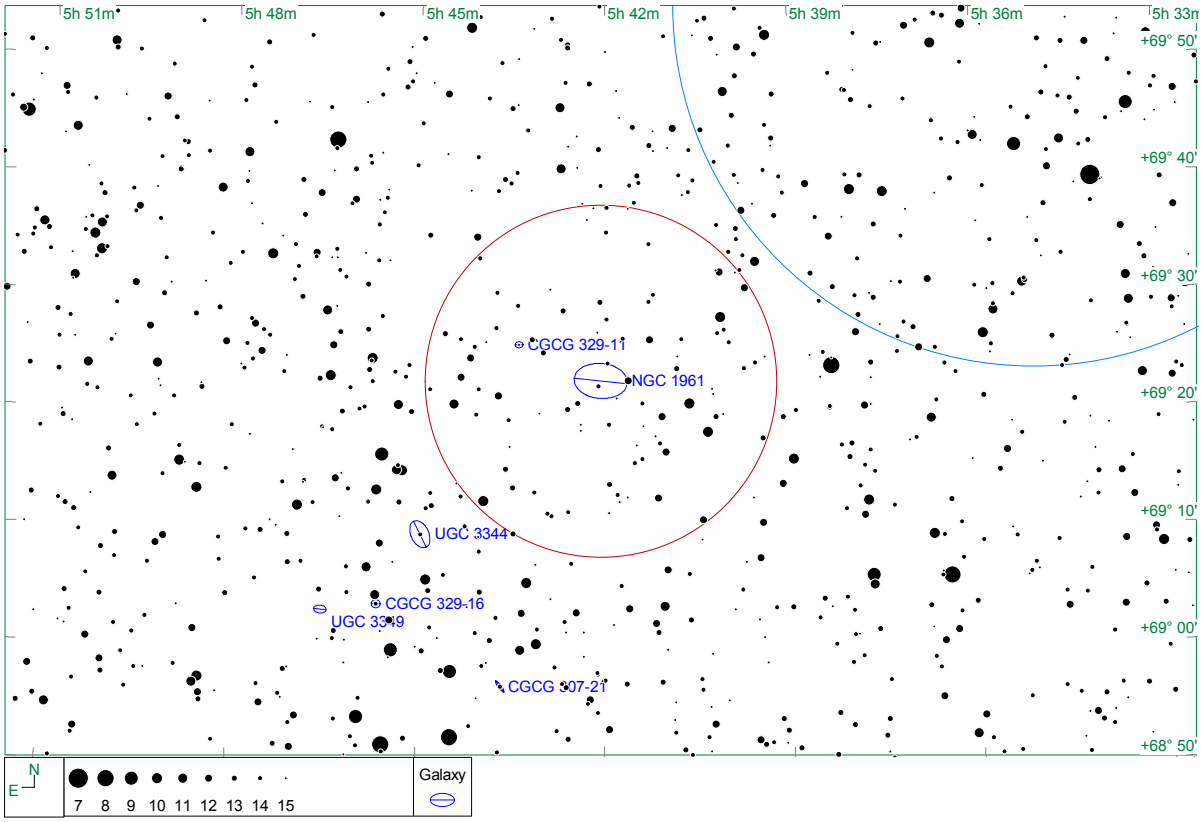
Galaxy
Open Cl


7h 00m
6h 30m
6h 00m
5h 30m
5h 00m
4h 30m
+72°
NGC 1560
+70°
NGC 1961
+68°
+66°
N
E
4 5 6 7 8
Galaxy



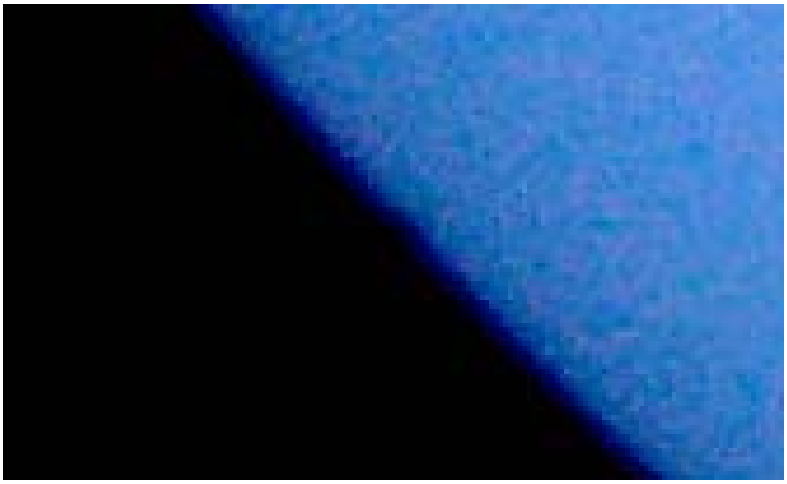
Member's Gallery

The following three photos were provided by Randy Brewer:

Setting Up at the Haak Winery, November 2006

Sunset at the Haak Winery, November 2006

Random images from Yoda



Mercury Transit
1st Contact C-8 + Nikon D-50 DLSR

Mercury transit
2nd contact C8 + Nikon D-50 DSLR

Ft Mckavett/JSCAS Star Party Oct 2006

Twilight
Nikkor 8mm f4 + Nikon D-50 DSLR 20 sec

Twilight on Observing Field
Nikon 50mm f1.4 + Nikon D-50 DSLR 10 sec

After Dark
Nikkor 8mm f4 + Nikon DE-50 DSLR 20 sec

Sunrise
Nikon 50mm f1.4 + Nikon D-50 DSLR 10 sec

NGC1253 by Al Kelly

NGC-1087 by Al Kelly

Hydrogen Alpha LRGB by Chuck Shaw

January Meeting Agenda

January 12th, 7:30 PM, Center for Advanced Space Studies/Lunar Planetary Institute, 3600 Bay Area Blvd (at Middlebrook Drive)

7:30 PM – Welcome / Guest Speaker

8:30 PM (approx) – Break

8:40 PM – Sig Reports and Star Party News

9:00 PM – Charlie's Challenge

9:10 PM – Astronomical Oddities – Hernan Contreras

Last Words, Door Prizes

Any unfinished discussions can be continued over food and beverages at a location to be announced at the end of the meeting.

Club Officers

President – Bob Taylor

Vice President – David Haviland

Secretary – David Haviland

Starscan Editor – Ken Steele

Starparty Chairperson – Lisa Lester

Librarian – Lisa Lester

Historian – Susan DeChellis

Scientific Expeditions – Paul Maley

Web Master – Chris Randall

SIGS

Observing Awards – Triple Nickel

CCD Imaging – Al Kelly

Binocular Observing – Leslie Eaton

Telescope Making – Bob Taylor

Deep Sky Observing – Chris Randall

Cover Image
JSC Scope in its Park Position

Credit: Andy Saulietis