

The High Desert Observer

The Bulletin of the Astronomical Society of Las Cruces

Sharing the Universe with our Community for over 60 years



Photo by John McCullough

August, 2013

The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on Society and public educational projects. Members receive the *High Desert Observer*, our monthly newsletter, plus membership to the Astronomical League, which includes their quarterly publication, *Reflector*.

Individual Dues are \$30.00 per year

Family Dues are \$36.00 per year

Student (full-time) Dues are \$24.00

Dues include electronic delivery of the *HDO*. Prorated dues are available for new members. Dues are payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a \$5.00 (per year) Sky and Telescope magazine discount.

ASLC Board of Directors, 2013

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August Meeting

Our August meeting will be held on Friday, June 23, in Room 77 at Doña Ana Community College, with the following schedule:

7:00 pm - 7:30 pm Show & Tell

7:30 pm - 8:00 pm Business Meeting

8:00 pm - 9:00 pm Guest Speaker & Presentation

This month we will present several different telescopes and explain their use and function as well as how to calibrate, align and use the instruments properly.

Events

ASLC hosts deep-sky viewing and imaging at our dark sky location in Upham. We also have public in-town observing sessions at both the International Delights Cafe (1245 El Paseo) and at Tombaugh Observatory (on the NMSU Campus). All sessions begin at dusk.

At our Leasburg Dam State Park Observatory, we hold monthly star parties. Located just 20 miles north of Las Cruces, we use our 16" Meade telescope to observe under rather dark skies. Please see *Calendar of Events* for specific dates and times

Outreach

Outreach is a very important part of ASLC. We are always looking for more volunteers to help us educate the public. Even if you do not have a portable telescope to bring to the events, please consider attending our public outreach programs to help answer questions, share knowledge and point out constellations in the sky.

The President's column-inch...

Jerry Gaber, former ASLC President and this year's ASLC Vice President, gave a great presentation, Astrophotography 101, at the July ASLC meeting, in which he managed to pretty well cover the different types of telescopes and cameras used in taking astronomical photographs, and some basics of how and why they are used. At a later date, Jerry will follow up with Astrophotography 102, and dive into the subject a little deeper.



At this point there is no formal presentation for the August 23rd ASLC meeting, and, as we have informally discussed, I would like to make this a hands-on night of demonstration and discussion about the various sorts of telescopes and mounts that Jerry told us about last month. I will ask some members to bring in an assortment of different hardware and be prepared to show it off, answer questions, perhaps demonstrate its use to the extent we can do so in a classroom meeting environment. I had suggested setting them up in the parking lot but was quickly reminded of the likely possibility of rain this time of year. It should be an interesting night.

Music and Stars in the Park at Leasburg Dam State Park will be on August 10th, undoubtedly before you receive this newsletter. Music will be provided by "Overcome Las Cruces". Astronomy will be provided by ASLC in cooperation with the local weather (we hope) and the vast reaches of the universe and the galaxy of which we are but a tiny part.

In September Music and Stars in the Park will be on the 7th, music by Bruce Carlson.

Our September 27th presentation is by Dr. Nancy Chanover from the NMSU Astronomy Department, on a completely different subject from her last talk (but I don't know what it is, yet).

And finally, the Okie-Tex Star Party at Camp Billy Joe, adjacent to Kenton, Oklahoma, begins on September 28th, running for a full week.

Have a Good Year; keep looking UP.
Chuck Sterling

Outreach Events for July, by Jerry McMahan

Moongaze, Saturday, July 13

After a run of bad luck, we finally had some successful outings. Chuck Sterling, Moe and his family, and Jerry McMahan attended the Moon gaze at the International Delights. Moe Azzolini went to the event at Leasburg before joining us at the café. His daughter continued to demonstrate her abilities to operate the goto on the EXT 125. Moe intends to join the club at the July meeting.

The Moon phase was fairly thin, but the Catherina crater complex was in a good position and Chuck's 10-inch showed the Cassini division on Saturn fairly well. Moe's 6-inch Dobsonian was also on the Moon at a magnification of 100.

I had a chance to demonstrate my psychic (psycho?) abilities. One customer said he had a trivia question. He asked "How many human beings", at which point I cut him off and said 12. He was impressed that I answered that 12 people have walked on the Moon, before he had a chance to finish the question. Actually, it wasn't much of a trick since he had just finishing looking at the Moon through the telescope.

We had some enthusiastic observers that said they would be back next month.

Music Under The Stars at Leasburg Dam Park, Saturday, July 13

Since I was at Moongaze, I was not able to attend the event at the new observatory, but based on the e-mails, it looks like we had a good turn out of club members. Jerry Gaber, Sid Webb, Daniel Giron, Rich Richins, Mike Zura, Steve Shaffer and Moe Azzolini attended the event. Moe said that the event was a success. The turn out of club members indicates that we may be able to support star parties as the park after all.

Calendar of Events: August 2013 - October 2013 (Mountain Time - 24 hr. clock)

AUG 20	19:45	Full Moon
23	19:00	ASLC MONTHLY MEETING
28	03:35	Last Quarter Moon
31	10:38	Moon - Jupiter Conjunction
SEP 05	05:36	New Moon
	18:42	Venus - Spica Conjunction
07	17:30	OUTREACH EVENT; MUSIC & THE STARS; Leasburg Dam Observatory
08	15:04	Moon - Venus Conjunction
12	11:08	First Quarter Moon
14	20:00	OUTREACH EVENT; MOONGAZE; International Delights
18	14:27	Venus - Saturn Conjunction
19	05:13	Full Moon
22	14:44	Autumnal Equinox
24	16:29	Mercury - Spica Conjunction
	21:39	Moon - Aldeberan Conjunction
26	21:56	Last Quarter Moon
27	19:00	ASLC MONTHLY MEETING
OCT 03	07:37	Uranus Opposition
04	18:35	New Moon
05	17:00	OUTREACH EVENT; MUSIC & THE STARS; Leasburg Dam Observatory
06	16:28	Moon - Mercury Conjunction
	22:30	Moon - Saturn Conjunction
11	17:02	First Quarter Moon
12	20:00	OUTREACH EVENT; MOONGAZE; International Delights
14	21:44	Mars - Regulus Conjunction
16	12:26	Venus - Antares Conjunction
18	17:38	Full Moon
	17:51	Penumbral Lunar Eclipse
21	04:17	Orionids Meteor Shower
25	19:00	ASLC MONTHLY MEETING
26	17:41	Last Quarter Moon

Be sure to visit our web site for the latest updates: www.aslc-nm.org

Minutes, July 2013 ASLC Meeting

Show & Tell

David Anderson didn't have a prepared topic for this evening's session and opened it to anyone with something to share. Fred Pilcher reported on collecting light curve data on asteroid 682 (Hagar?) and determining its rotational period, the first time in history this has been performed. Fred also commented on how his involvement in the science of astronomy and understanding of the physics of planetary motion does not prevent or diminish his appreciation of a full Moon setting in the morning twilight shortly before the Sun rises.



Call to Order

Chuck Sterling, President, Astronomical Society of Las Cruces (ASLC) (the Society), called the July business meeting to order at 7:30 pm, 26 July 2013, Room 77, Dona Ana Community College, Las Cruces, New Mexico.

President's Comments

Chuck Sterling, President, welcomed the group to tonight's meeting. He thanked Fred for his report and comments. There were two (2) new members attending tonight's meeting: Ed Montes has been a member for several months, but has recently completed his move from Silver Springs, MD, to Las Cruces and was attending his first meeting; Karl Ray has attended several meetings as a guest but joined as a member tonight. He is a teacher at the New Mexico Corrections Center. There were no guests attending tonight and Chuck asked that all members check in on the sign-in sheets.

Secretary's Report

The Secretary, John McCullough, reported that the minutes for the June meeting were submitted for publication in the July issue of the Society newsletter, the High Desert Observer (HDO). Robert Williams moved that the minutes be accepted as submitted, Jerry Gaber seconded. The motion passed by acclamation and there was not an additional Secretary's report.

Treasurer's Report

The Treasurer, Trish Conley, reported on the status and balances of the Society's accounts. There was no additional Treasurer's report.

Committee Reports

Note: Ron Kramer, Past-President, is currently Chairman, Co-Chairman, or acting Chairman of several standing committees of the Society. While he is out-of-town, there will be no reports from those committees for which he serves as Chairman or acting Chairman.

Fund-Raising and Grants

Sidney Webb, Chairman, reported that he is ready to submit an interim grant status report to the New Mexico Space Consortium. The Society remains eligible for \$1500 in grant funds that will match \$300 of Society funds. He noted that a stipulation of the grant is to increase young (high school age) persons' participation in Society activities. Sid would like to open a page on the yahoo group for suggestions on how to accomplish this, especially once school resumes in August. One suggestion offered at tonight's meeting was to partner with the New Mexico State University (NMSU) student astronomy group to help involve local high school students in astronomy events and activities.

Membership

John McCullough, Chairman, noted that Society membership had dropped by eleven voting members from May to July, mostly because of delinquent dues payments.

ASLC Observatory at Leasburg Dam State Park (LDSP)

Jerry Gaber, Co-Chairman, reported a "Music Under the Stars" event was held at LDSP on 13 July. There were about 160 attendees and several Society members attended with their telescopes, but, despite good skies, viewing lasted only about an hour after completion of the music program (about 10:00 pm). There was a power glitch with the 16" Meade, but several valuable operational lessons were learned. There are still mechanical issues with the 16" and Jerry is waiting on parts to address those. There is a 3rd quarter Moon this weekend, which is when the Society intended to host public events at LDSP. However, the Park/rangers require at least a 3-week notice to insure their support and planning is in place, so there likely won't be an event this weekend. Jerry wants to offset the event/viewing schedule to allow viewing objects other than the 1st or 3rd quarter Moon. As part of the agreement with the State Parks Department, the Society is committed to host at least one public event per month. The "Music Under the Stars" program continues through November and will meet that commitment until then. Jerry asked if any members present are interested in supporting events at LDSP to please contact him. The next opportunity other than the August "Music Under the Stars" will be 31 August.

Outreach

Chuck Sterling, Outreach Coordinator, gave an update on events scheduled for August: "Music Under the Stars", LDSP, 10 August; Moon Gaze, IDC, 17 August; monthly meeting, DAAC, 23 August; 3rd Quarter Moon, 31 August.

Society Website

Steve Barkes, webmaster, reported he can always use inputs for the website.

There were no additional committee or officer reports.

Old Business

1. Okie-Tex Star Party, 2013 – This event starts 28 September. Contact Steve Barkes for details.
2. State-wide Star Party, 2013 - Ron Kramer has been working on this event with the TAAS (The Albuquerque Astronomy Society) president. The planned date is 02-03 November at the Sevilleta National Wildlife Refuge north of Socorro. Participating clubs are expected to include Albuquerque, Silver City, Carlsbad, El Paso, Alamogordo, Socorro, and Las Cruces. It is expected that there will be no attendance cost to participants other than transportation. This has potential to be the largest star party in New Mexico. 8-10 Society members have expressed interest in attending.

There was no additional old business for discussion.

New Business

There was no new business for discussion.

Announcements/Awards

Chuck Sterling noted that a program presentation for August is needed.

Robert Williams reported that he recently visited the National Radio Astronomy Observatory's Very Large Array (VLA) west of Magdalena, NM, with TAAS. He reported that a new radio sundial will be dedicated in late September; he will obtain additional details. A "behind-the-scenes" tour of the VLA may be available to Society members at that time. He also noted that the Enchanted Skies Star Party sponsored by the Socorro club is coming up in early October. He will obtain additional details on this event.

There were no additional announcements made.

The business portion of tonight's meeting was closed at 8:00 pm.

Presentation

This month's presentation was made by Jerry Gaber, Society member and current Vice-President, on "Amateur Astrophotography – An Introduction to Astrophotography, or, Every Decision is a Trade-off". Jerry noted that before he relocated to Las Cruces, he purchased a lot of astronomy equipment with the intention of pursuing his interest in astronomy. He became involved with the Society after arrival and worked with a number of members to get his observatory built and set up. This sparked an interest in astrophotography which drove him to consider numerous decisions involving equipment, capturing data, processing data, and producing images. He discussed a number of the options that had to be considered at each phase of the process and the pros and cons involved.

The July meeting of the Astronomical Society of Las Cruces concluded at 9:10 pm.

-Respectfully submitted by John McCullough, ASLC Secretary

Peltier Cooler II for a DSLR Camera by John Kutney

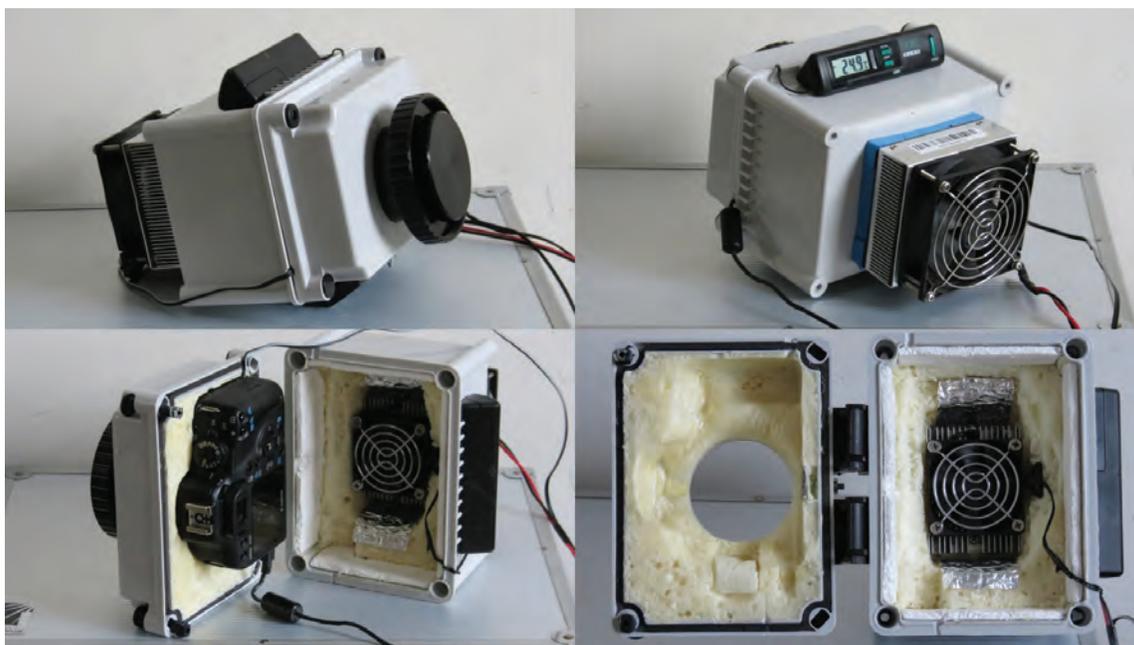
Introduction

There is always a debate about whether a DSLR (digital single lens reflex) or CCD (charge-coupled device) camera is a best choice for astrophotography, especially as an entry into this field. Clearly there are benefits for each of them. A DSLR is usually less expensive, camera control software is free, and image sensor chip size is generally larger. CCDs have smaller sensor chips and have built in cooling. The cooling enables one to have long capturing sessions without overheating the components which usually generates unwelcome noise. There are also many other elements to take into consideration between the types of cameras.

One can build a Peltier cooler for their DSLR camera with a few simple components. This article outlines my second attempt to build a cooler for my DSLR thereby getting closer to the benefits of the CCD camera. My first attempt was not successful since I deviated from the prescribed methods as detailed in Gary Honis's web site which gives very detailed specifications on making a Peltier cooler. <http://ghonis2.ho8.com/>

Concepts

This new approach for a DSLR cooler is described by Ignacio Diaz Bobillo [ignacio@pampaskies.com] from Argentina where he uses an electrical junction box, thermo-electric cooler, and foam insulation. Built from a watertight plastic box used in outdoor electrical wiring, this new revision is more robust, and thermally more efficient, than the previous one. See http://www.pampaskies.com/gallery3/Equipment/cooler_v3 for additional details.



My Rendition

I could only wish my cooler looked as professional as Ignacio's. However, the results were very impressive with a drop in temperature of 25 degrees Celsius in 30 minutes.

First problem is that one cannot (I repeat cannot) find a 7"x5"x5" clam shell box as used by Ignacio. I searched for over a week on the web and visited every electrical store in the area. The box is apparently only available from an electrical company in South America with a non-English web site. I was able to substitute a 6"x6"x6" junction box from Grainger Electric in Phoenix. The depth is particularly important to fit the Peltier cooler and

camera within the enclosure. Width of only 6" required a modification for the USB camera connector. The ears are removable and not required.



6X6X6 Electrical PVC Junction Box

The specifications of the Peltier cooler and fan assembly are as follows:

Specification Sheet

Part #	Q _{max} (Watts)	Volts
ATA-015-12	15	12



Specification	
Part #	ATA-015-12
Description	Air to Air Assembly
Cooling Capacity	15 Watts
Input Voltage	12 Volts DC
Working Range	-10 to 70°C
TEC Current (running)	3.2 amps
TEC Current (start)	3.8 amps
Fan Current (external)	0.18 amps
Fan Current (internal)	0.13 amps
Weight	.74 Kg (1.63 lbs)
Rating	NEMA 12

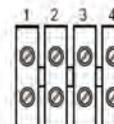
The ATA-015-12 is a thermoelectric air conditioner. Also referred to as an air to air heat exchanger or cabinet cooler. It is designed for temperature regulation of small electronic cabinets or enclosures. They are often used where it is better to circulate cooled air rather than use a direct contact cold plate.

Features:

- Compact and lightweight.
- Can be mounted in any orientation.
- No fluorocarbons or compressor.
- Virtually maintenance free.
- Simple quick installation.
- Includes mounting gasket.

WIRING DIAGRAM

Position	Description
1	TEC +
2	TEC -
3	Fan +
4	Fan -



Also a simple and inexpensive temperature sensor was added to monitor the cooling.



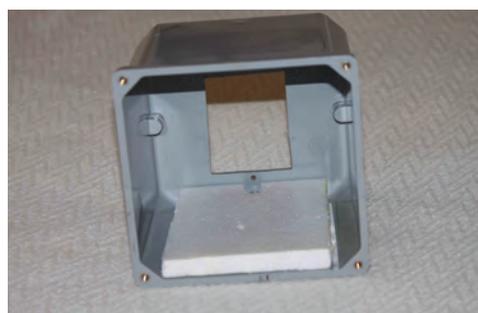
MaTester: LCD Fridge Freezer Temperature Digital Thermometer

Product Assembly

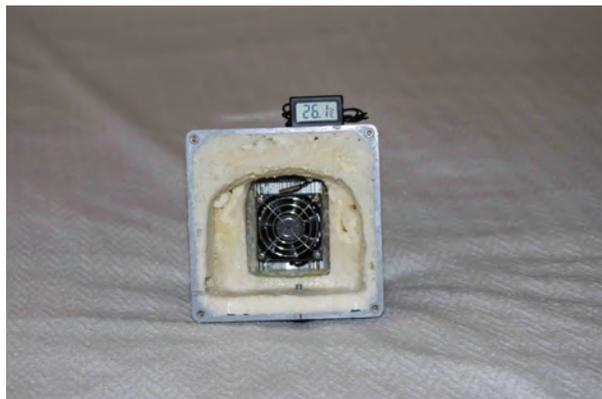
Given the compromises of available equipment, I was able to modify the cooler to build a usable DSLR cooler.



Junction Box with cutout for Peltier cooler assembly



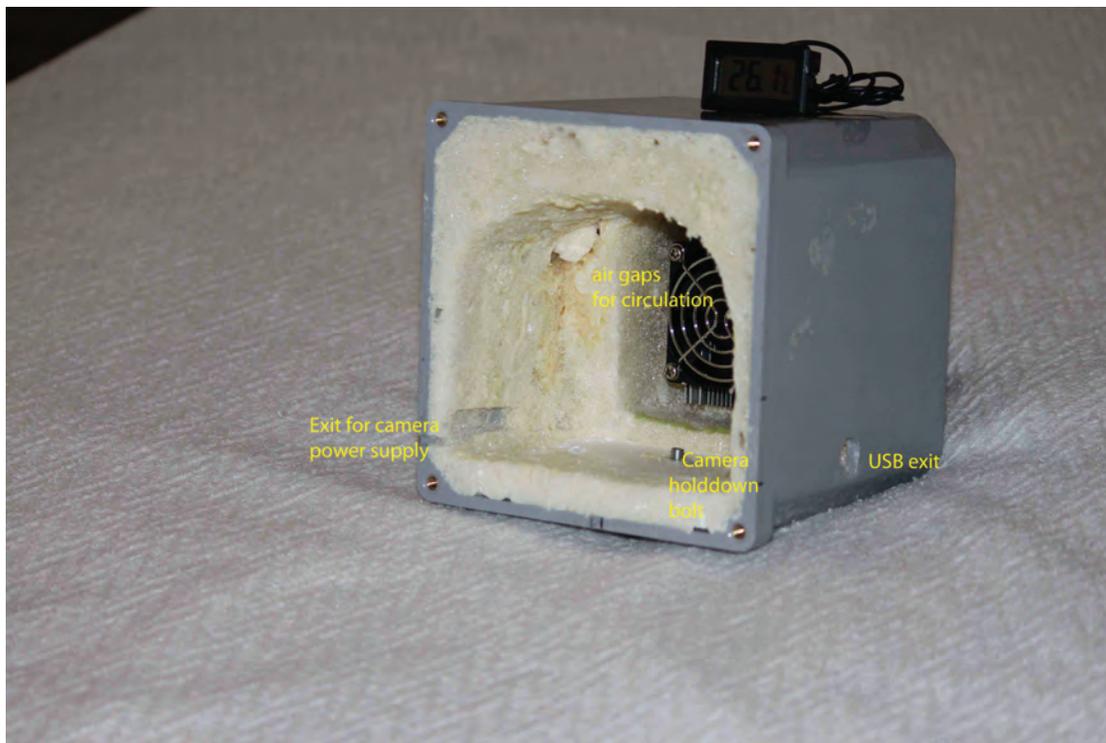
Foam insert to elevate the camera



Cooler/Foam/ Temp sensor



Cooler assembly with 12V connector and switch



Close up of the foam cutout without camera

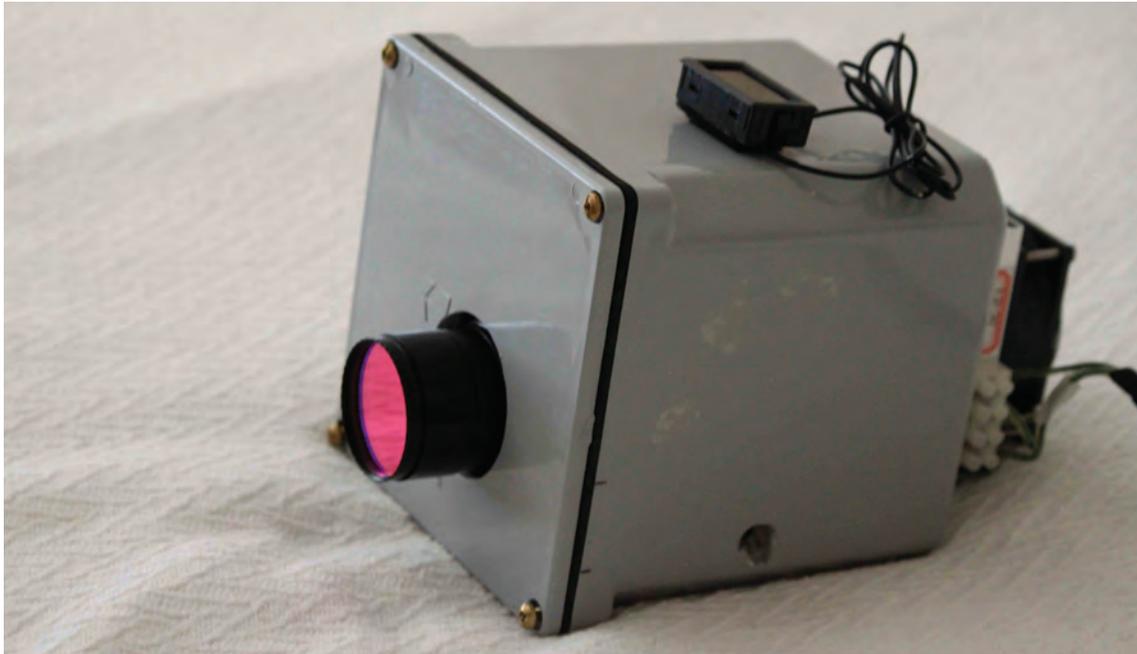
Final Product

The hole in the side of the box was the modification that was required for the camera cable USB connector. The 6" junction box was not wide enough to contain the cable connector. The power supply for the camera only required a small drill hole for the cable to exit the box. Not seen in the photos is a hole to contain the hold down screw to attach the camera to the box for stability. A hole was placed appropriately in the bottom of the box as a potential drain if condensation becomes a problem. The drain hole can be extended to the cooling area to collect any buildup of moisture but this is not expected.

The specifications for the cooler assembly also come with templates for cut outs. The camera lens hole was drilled at 2 ¼ inches to accommodate my T-ring to Barlow assembly not shown above. There was no perceivable cold air leakage around the lens area.

Main issue was with the polyurethane foam. The camera and cooler were wrapped in Saran wrap and placed in the assembly before injecting the foam to develop basic contours for the elements. Even though the foam was designed for greater than one inch foam closure, there were significant air gaps that required several additional applications to get the proper fill. As may be expected the most labor intensive area was form fitting the foam to the camera and cooler assembly. An Exacto knife was used extensively to obtain a good fit and provide ease

of exit and entry of the camera. It would be recommended to use less than one inch applications over multiple applications to gain the best results. Aluminum tape will be added to the inside to enhance the conductivity of the cold air.



Summary

The cooler and camera were placed into operation for 30 minutes resulting in a 25° Celsius (45° F) reduction in temperature. The results of my Peltier II model exceeded my expectations. It was considerably less complicated than the first model. Simple hand tools such as knives, screw driver, hand drill, soldering iron was all that was required.

Photo of the Month



Moonset from Taiwan
Image credit Hung-Hsuan Yen



It took three worlds to create this simple image. The first world was the Earth, which was quite prominent. The dividing line running horizontally below the middle separates sea from sky. On this part of the Earth, it was almost nighttime.

The second world was the Moon, which was almost invisible. The Moon had its unilluminated half masked by the red sunset glow of Earth's sky. A thin sliver of the new Moon was visible, a crescent that traces the bright curving line.

The third world was the Sun, which does not appear directly. All of the light recorded in the image originated from the Sun. The above half-second exposure was taken in August from Anping, Taiwan. A few minutes after this image was taken the Earth had spun just a little bit further -- forcing the Moon to follow the Sun into the sea -- and the horizon to become dark.