



Longmont Astronomical Society
November 2003

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The View From Up Here

Dear members and friends,

I hope all of you had a chance to view the lunar eclipse last weekend. It was one of the most beautiful and colorful eclipses I have seen in a long time.

Well, it's a little past 9 pm Tuesday night as I write this, and I just stepped outside hoping to catch sight of an early Leonid. What a beautiful night – even from the middle of town! The Summer Triangle is hanging above the western horizon in all its defiant splendor, Mars is still aggressively staking out his territory, Andromeda galaxy is naked-eye at zenith, the Milky Way is gently flowing across the vault of heaven, and the mighty winter king Orion is dominating the eastern sky. Wow! I love it!

Closer to home, here is another reminder about our upcoming elections. We will have nominations in both November and December, with elections at the December meeting. Please try to attend these important meetings and exercise your right to vote – you bought that right! As a reminder, the elective offices are: President, Vice President, Secretary, Treasurer, Astronomical League Correspondent (ALCor), Newsletter Editor and Publicity/Fundraising Chair. Please consider running for office if any of these positions appeal to you; this is one of the best ways to influence the course the club takes throughout the year.

And finally, a reminder about our upcoming annual banquet, which is on Saturday, January 3rd at the Wayside Inn in Berthoud. See the announcement in this newsletter – and note that we have added a children's 2-chicken leg dinner for \$5. Please have your reservations and payment in by December 20th. This is always a fun time - hope to see you there!

Clear Skies,

Bob Spohn
President

Calendar

November

LAS meeting 11/20 – Star Party Pawnee 11/22 - New moon 11/23 – Star Party Flanders 11/29

December

LAS meeting 12/18 – Star Party Pawnee 12/20 - New moon 12/23

October meeting notes

Meeting was opened and visitors and guests were welcomed: Ron & Rene, Mike Fellows, Larry & Tim Dunn, Josh, Brian.

VP report (Melinda Diehl): no report

Sec/treasure report (Monica Martens): Astronomical League check sent. Monica is collecting dues for 2004, magazine subscriptions and calendars.

Newsletter editor report (Philippe Bridenne): Philippe organized Gilpin star party for the 18th with Sarah Stephens. Also, please send newsletter articles and classified ads to Philippe.

Publicity/Fund Raising (Kirk Schneider): See Kirk at break to buy patches and stickers and to order t-shirts

ALCor report (Jim Crane): You are automatically a member of the Astronomical League when you become an LAS member; benefits include the observing program certificates.

Webmaster report (Steve Albers): Astronomy links have been updated, including a link to the Galileo (JPL) website.

Equipment Chair report (Leigh Pierson): Mondays and Wednesdays at his house for scope building and observing.

Old Business: LAS Constitution has been changed to split the secretary/treasurer position into 2 separate offices, effective 2004.

New Business: Officer nominations for 2004 will be held at the November and December meetings. Elections held at the December meeting. Annual banquet will be held on Saturday, January 3rd at Wayside Inn in Berthoud. Social hour 5:00P, dinner 6:00P.

Constellation of the month presentation by Archer Sully on Lepus, assisted by Monty Python!

Mini-presentation made by Harry Albert on constructing high-performance, low-cost telescopes. We are all looking forward to following the construction progress on this scope.

Main speaker: Michael Hotka – presenting a Ball Aerospace video on the physics of orbital mechanics. It was very illuminating and educational.

Report for Pawnee National Grasslands by Gary Garzone

The cactus are alive and well and living on the high plains. You have to watch out for them in the dark kneeling to move scope around I seem to find some. It was a no brainer to pick such a great nickname for our dark sky site at Pawnee National Grasslands..

Steve L ,Dave D, Greg M. , Tom T. and myself showed up for another star session but very poor seeing at times and not so transparent skies with less than perfect contrast, but that did not stop us. Dave D said it well

Here I show that non-rechargeable batteries would be most economical, at about \$1/hour, if you bought six lantern batteries for \$39. A rechargeable battery, about \$60 including handy charger, would last far longer, and be much more convenient, but it would need a slightly fancier heater system, which I will describe. The prototype commercial units are typically 20 Watt bands which wrap around the tube of a Schmidt Cassegrain and run from 12 Volt power sources like automobile cigarette lighters. They give some heat to the transparent corrector plate to raise its temperature above the dew point. Some are called dew-zappers, a handy term.

Bob said something about 9 Volt batteries. The only nine-volt batteries I have found for sale are the little units about 1" by 2" by 3/4", which cost about \$2.25. To run a 20 W load for six hours would take about 47 of these little batteries all connected up together (series or parallel or in some combination). That would be about \$18 per hour. The power would start well above 20 W and droop rapidly, ending around 14 W.

Those are alkaline batteries, the kind the Eveready Bunny uses (or is he or she a Duracell bunny?). Old style carbon/zinc batteries give far less energy (power times time) per dollar. Les says the Nickel Metal Hydride batteries he knows about from the hobbyists who build models are much more economical, mainly because you can recharge them, but the initial outlay for batteries and charger is far higher than for a set of Alkaline Energizers, and probably a good bit higher than the lead-acid battery with charger which I describe below.

Ask Les.

If you use twice as many of the alkaline cells and run them all at the same time you will get lots more than twice the life. This is because the capacity, in watt-hours or ampere-hours, is higher at moderate current drain than at high drain. I will give examples here for using D cells, which cost about \$1.25 each (Target, six packs), and guess that it would be more cost effective to use alkaline lantern batteries (about \$6.50 each).

Here is data from a catalog of industrial Panasonic batteries, which shows life at light loads. A D cell with a 100 ohm load begins at 24 mW (milliWatt), i.e. 0.024 W, and 1.56 V, and 1200 hours later is down to 0.9 V and 8 mW. During this time the average power is about 14 mW, so it gives about 17 watt hours, or 13 Wh/\$. Compare that with a C cell, slightly smaller physically, for nearly the same price. I am guessing \$1 each. It would be through in 380 hours, so it would give only 5.3Wh/\$. Use the bigger D cell!

From a web site I got data for D cells showing how the life varies with current. Suppose you wanted to run the dew zapper for 12 hours.. How many D cells would it take? What would be the cost per hour, for average power 20 W? And suppose you wanted the power to drop from maximum (above 20 W) to half the maximum.. the average current would be around 400 mA per cell, and average power about 0.5 W per cell. For 20 W it would take 40 cells, \$50 worth. That's \$4.20/hour. Ouch.

But I'm guessing that after the first half hour or so of heating, the corrector plate temperature has risen enough, and is still rising, and lower power would be fine. So you could reconnect the cells for half the voltage, half the current, and a quarter the power, that is, 5 W. They would last much longer than 12 hours. To begin with, the capacity per cell, in ampere hours, is half again as much at 200 mA as at 400, so at half the current, they would last three times as long. The same 40 cells, at 5 W, would last 36 hours, so they would cost \$1.40/hour. Not so bad.

A lantern battery weighs about 5.4 times as much as a D cell. It is made of four cells, so each weighs 35% more than a D cell. My catalog data lacks lantern battery capacities, but plotting weights vs. capacities for various smaller batteries suggests the capacity per cell is about 1.8 times as high, or 7.2 times for the whole battery. Perhaps you could get by with 6 lantern batteries, for \$39, and run more than 36 hours, for about \$1 per hour. They are easier to connect to than D cells are. D cell cases are stainless steel, and you can't solder to them without wrecking the battery with heat and using evil fluxes. I have tried capacitor-discharge welding, and punched holes in the thin stainless steel. Clumsy, and fatal to the cell.

Here is an alternative battery idea. Orion Telescopes has in the newest catalog a rechargeable 12V battery, rated 7 Ah, for \$56 plus shipping. It includes chargers and handy cigarette-lighter type terminals. The nominal 84 Wh could run 20W for half an hour, then 5 W for 15 hours more, for each charge. And you could use it many times, recharging from your car cigarette lighter or from 120 V AC. That's what I would do. It would be much more convenient than 6 lantern batteries. hat's what I would do if I did not want to connect the dew zapper to the car and risk being unable to start it after a long winter night of observing. But to change

from 20W to 5W you would have to have two sets of heater resistors, connectable in parallel for 20W, used one set at a time for 10 W, or in series for 5W.

How to make the heater itself? It has to be able to wrap around the telescope and carry heat to the telescope tube from economical heaters. I would think that a small heater every two inches around the circumference of the tube would be fine. For a scope with 10" mirror and 12" tube, circumference 38", twenty heating sites would work, each one a little resistor which would put out a bit more than a watt when the battery was fresh. Resistors made to withstand 2 W are available at J B Saunders in Boulder; my guess is that you could get 20 for \$10. Then you would buy copper tape to wrap around the telescope, with one end of each resistor soldered to it. The result would be not nearly as pretty as the dew zapper from Orion or similar source, but it would cost less than half as much, and you could switch the power between 20, 10 and 5W. I would buy 150 ohm, 2W resistors, and connect them alternately.. resistors 1, 3, 5 etc would be in parallel, and 2, 4, 6.. Thus there would be three terminals: the copper tape (common to all), and the two sets of hoop-like parallel connections. There would be no need to insulate them at the low voltage of 12V. 20 W might be battery - to the tape, and + to both hoops. For 10 W, disconnect one hoop. For 5 W, connect - to one parallel hoop, + to the other, and nothing to the tape.

Questions? Harry Albert, 303-494-8415, Boulder.. retired, so my hours are irregular. If you want to leave a phone message, it must ring 12 times or so before the Quest message service kicks in. Or try email: h.b.albert@mindspring.com.

Star Party Documentary

Leave your telescope and heavy coat at home. On December 1st, you're invited to a star party that explores the human side of the sky.

"Star Party--A Documentary" will be featured at Starz FilmCenter on December 1st in a special, one-time screening as part of Open Screen: Colorado Filmmakers Showcase, sponsored by Starz FilmCenter and the Denver Film Society.

The hour-long documentary is a fascinating and light-hearted look at the world of amateur astronomers and star parties. Academy Award winner Donna Dewey will introduce the film, and creators David Croy and Chris Rock will be on hand at this, the film's big screen premiere.

Don't miss this chance to see the world of amateur astronomers come to life. As co-creator Chris Rock says, "This isn't about science. It's about the people behind science. The faces and the stories and personalities, and the reasons why any of us look up at all."

Visit the Starz FilmCenter website for show time, ticket prices and details.

<http://www.starzfilmcenter.com/moreinfo-soon.php?1201Star>

For more information on "Star Party," visit the official website. <http://homepage.mac.com/starparty>

Leonid Report by Gary Garzone

The skies were very clear with no clouds at all, full sky views in every direction but seeing in early evening was totally bad as Saturn boiled in eyepiece.

The Front Range Community college astronomy class showed up for what turned out to be mostly just a good star party night and not such a great meteor shower event that I was hoping for.. Terry Frazier asked where is the beef ?? remember that old lady in Burger King commercial? but anyway there seemed to be not much beef in meteors coming in. I saw maybe 30 thru the night, no great fireballs or Bolides and not the 30 per hour I was looking for. The moon came up around 2:30 am so we got pretty good dark sky views in for awhile.

I stayed up till 4 am before I finally went to bed. Mike Hotka who also showed up and stayed until 2:30 to 3 am I think it was. I must say I enjoyed the College teacher Clara who was explaining things to the kids as I would find objects in 30 scope to view. We looked at double stars when seeing got better late ,after midnight. Orion and Saturn were the highlights but we did at least 25 objects through out the night. We saw Jupiter but still low in horizon for not so good views but first I have seen of Jupiter since last year.

I thank all you people who showed up for braving the cold. I had fun once again for a very enjoyable night with my astronomy friends. bye, gary

Classified

To sell:

Sell Compaq Presario with Windows 98, keyboard, mouse, monitor, speakers and a lot of software including Starry Night Pro.

CPU AMD-k6-2 350MHz with 128Mb memory and 7.468Gb disk

Include StarryNight Pro application

Price: \$300 send email to philippe_bridenne@yahoo.com

10" Sears Craftsman table saw

Price: \$200 send email to Brian bnimball@msn.com or call him at 303-678-0525

To buy:

I am looking to buy a 1 1/4" rack and pinion focuser. It is for a 10" Dobsonian scope.

Send email to Bob Spohn jviews@mindspring.com

If you have stuff to buy or to sell, send an email to your newsletter editor philippe_bridenne@yahoo.com

and gas. It is bright enough to be seen with binoculars from city sites and with naked eye beneath a dark sky, being one of the most distant objects visible to the unaided eye. In the field of larger binoculars, or using a small telescope, you can see its two neighboring elliptical galaxies. M32 is small and compact; M110 is larger and more diffuse, and is therefore harder to see.

Gamma Andromedae: This is a beautiful double star. The brighter member of the pair is a golden yellow, and its companion is greenish blue.

R Andromedae: This Mira star has a range of 9th magnitudes.

NGC 752: This open cluster lies about 5 degrees south of Gamma Andromedae and is easy to find because of its relatively bright stars. Because it is spread out over such a large are, it is actually easier to see though binoculars, than through a telescope. If using a telescope, use it at its lowest power.

NGC 7662: A fairly bright planetary nebula, this blue-green object looks almost starlike through the smallest telescopes. But through a 6 inch (150 mm) telescope at moderate power, it becomes a graceful, glowing spot of gas bout 30 arc seconds across.

NGC 891: This galaxy is a challenge even for 6 inch (150 mm) telescopes. However, with good eyes and dark sky, you will see one of the best examples of a spiral galaxy, viewed edge-on.



