The Night Sky

The Official Newsletter of the Astronomy Club of Akron

Volume 21 Number 8 August 1999

HAPPY 50th BIRTHDAY!!!!

To whom, you might ask? To all of us! Our club is 50 years old. I m sorry to say that an exact date isn t known not by me anyway, but 1949 is definitely the year the club came into being as well as a couple *Night Sky* editors I can think of.

The President s Corner

Here it is August already. I assume everyone that attended the picnic had a great time. I know the food was good. Again I'm sorry my work schedule interferes with the club's activities. The "Lights On - Lights Off" program went well - right up to the rain fall. We have had a couple of really clear nights without the Moon ruining things for us, so we should be thankful for that.

I talked with Jeff Burns (a ham operator) and he has agreed to link the ACA to the web page he is putting together for the City of Green, since the Observatory is in close proximity to Green. Jeff's web page for Green is (I think) geenoh.com. Many Thanks also go to Jeff for the help in upgrading my computer. (THANKS JEFF !!!!)

Don't forget the upcoming programs at the Observatory. When I can make them I Will. The Persied Meteor Shower is coming up soon. I hope to be there for it.

By the way, for those interested the ACA has its own HAM call sign! It is **W8ACA.**

CLEAR SKIES!

A Note from Peggy

October Meeting Date Changed

To accommodate our speaker, Joe Nieberding, the October meeting will be on October 29th and not the 22nd (the 5th rather than the 4th Friday of October) Joe is having surgery in September and is hoping he will be sufficiently recovered to speak on that date to our group. ***So please note the change***.

A Note from the Editor

Email Distribution of The Night Sky is at hand!

Please see the article on page 6 for details and how to be included as a beta tester!

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Lou Poda.....773-8160
Dave Jessie.....688-9043

OTAA REPRESENTATIVE

Lisa Swing-Corney, Chairperson.....896-0836
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For Sale - *The ACA's Classifieds*

Celestron Celestar 8" with Sky Vector-2 Computer. Many extras including dew shield, dew zapper, motor focus, dec motor and hand controller. $1500

Call Randy Morton on 330-929-2075

ACA Members: send in information you'd like to have included here to buy, sell or trade

ACA MONTHLY MEETING INFORMATION:

Next Meeting..... September 24th at 8:00pm
Location.....Portage Lakes Kiwanis Hall
Speaker.....To Be Announced
Subject..... To Be Announced

ACA Merchandise Mart

Astronomy related items at low club prices!

ITEM	Non Member Cost	Club Member Cost
T-Shirts	$15.00	$10.00
SkyClobe 5.25"	$4.00	free on
SkyGlobe 3.5"	$4.00	your disk
Star Wheels	$2.00	$3.00
Kalmbach Publishing - - - 25% to 44% off for members		
Sky Publishing - - - 10% off for members		
Sky & Tel Mag	$36.00	$29.95
Astronomy Mag	$33.20	$29.00
Edmund Scientific - - - 15% to 45% off for members		

Contact Dale Knotts at 330-644-1661 for additional information

Send your articles, items for sale, and comments to:
The Night Sky - Dave Jessie
5020 Fishcreek Rd
Stow, OH 44224-1934

If you have email capability, send to:
DAJessieStow1@worldnet.att.net
Or call: 330-688-9043

The deadline for article submission is the 18th of each month. If you have info that needs to be in the next *Night Sky*, I must have it by the 18th of the previous month! All files should be straight ASCII text files, or Word 7.0 to minimize the import and conversion headaches on this end.

Please send in your articles! The newsletter (and the club) will be much richer with your contribution!

Thanks to all that have used your valuable time to author or collect material for the Night Sky.
(Ed.)

ACA Monthly Meeting Information

The ACA meetings are the 4th Friday of the month except in November when we meet the 3rd Friday and in December when there is no meeting. We meet at the Kiwanis Civic Center on Portage Lakes Drive at 8 PM. Please note that the ACA Dark Sky Committee meeting occurs ½ hour before normally scheduled monthly meetings. The last ACA meeting (until September) will be held one week earlier than usual due to the Memorial Day holiday weekend. Thanks to all the members who attended meetings- we averaged about 40 people per meeting! Please attend the observatory events this summer and see you back in September!

June	NO MEETING
July	NO MEETING
August	NO MEETING
Sept 24th	1st ACA meeting following the summer break. Speaker: to be announced Topic: to be announced
Oct 29th	Speaker: Joe Nieberding-NASA Topic: Space Station & Mars Update ***Note: This is the 5th Friday of the month instead of the 4th !!***
Nov 19th	Speaker: Steven Cederbloom Topic: to be announced

Coming Events

Aug 12th-13th	ACA Observatory
8:30 PM	Persied Meteor Showers Public Program
Aug 14th	OTAA Convention
5:00 PM	Mahonning Valley
Aug 21st	ACA Observatory
7:30 PM	Fall Constellations Public Program

(See page 6 for directions and map)

Grinding the 20” Mirror

By Bill Prewitt

Editor s note: This is a continuation of last month s article by Bill in which he discussed the construction of his 20 telescope. In this final chapter, he describes the grinding of the mirror. For anyone who hasn t had the pleasure of gazing through this masterpiece, you owe it to yourself to come to a public program at the observatory and have a look!

I ordered the BVC mirror blank generated to an f5 curve as an option, saving the step known as "hogging" or "the caveman thing". They apparently used sandblasting rather than grinding against an iron master, as the curve was only accurate to within 25% of the correct depth. I cast a 14" concrete grout tool on this surface, and epoxied on ceramic tiles when it was dry. I made a 3 RPM turntable from scrap lumber and a big gearmotor from a Xerox machine which I had taken apart.

The first step is to grind the back of the blank flat against a piece of window glass. Grit sizes down to about 500 should be used to make sure there is no stress or unevenness left in the back side to affect the figure. The next step is to get an intimate contact between tiles and glass on the optical side.

With a subdiameter tool, you can concentrate force on the center or edge as required to get the proper depth of curve. For a 20" f5, a 1/4" drill bit should just fit under a straight edge when you have reached a spherical figure. Grinding with 80, 120, 220, 320, 500, 12 and finally 5 micron grit took most of December.

The first polishing lap, 14" diameter, was cast from grout, varnished with polyurethane, then coated with beeswax. 1" squares of pitch were poured, then applied to the surface in a grid. The torque of the turntable with the pitch lap was too much for my wrists, so I polished entirely by hand and gave the table a whirl every few minutes to randomize it.

After two weeks of hard work, I had to go back to fine grinding with 12 micron because of some bad scratches and an outer ring of pits that wasn't polishing out. A week with 12 and 5 micron brought much improvement, and polishing went faster than before.

Six weeks later, the mirror was fully polished out to the edge. A laser spot was barely visible on the surface. It was time to start figuring.

Grinding the 20 Mirror (continued)

Figuring is the process of removing a millionth of an inch or so of glass from the center and the edge, to turn your spheroid into a paraboloid. The "natural" result of randomized pushing of a convex against a concave surface is a figure which is close to a sphere. A paraboloid is only a bit deeper in the center and flatter at the edge. Figuring consists of placing the mirror on a test stand and measuring the shape of the surface with a Ronchi grating or Foucault test, then polishing some more, with emphasis on the "high" zones.

You should keep a log of your measurements, your assessment of the correction needed, and the stroke you used to attack the problem you found. It turned out to be impossible to reach the necessary depth of correction with a 14" lap, so I made a 10" lap. Even this was insufficient, so I eventually used a six inch lap to deepen the center and the ten inch lap to flatten the edge. A four, two, and 3/4" lap also were used to adjust smaller high zones. Much time was wasted trying to parabolize with too large a lap, and recovering from a deep hole I managed to dig in the center.

The whole process took 5 weeks and 178 figuring steps. I stopped when the measurements were all in the center of the tolerance zones and nothing could be improved further. By avoiding the learning curve and the dumb mistakes, doing it again would probably only require 1/3 of the time.

I'd be glad to help anybody who wants to try grinding a large or small mirror. It's a great way to spend the winter.

********** FREE STUFF FOLLOWS **********

My turntable, Foucault tester, tool and laps are available free for the asking to anyone who wants to borrow them. I also have free grit, pitch, and Cerium Oxide polish to spare.

**********F

For those with Internet capabilities
See Bill s web page of
CCD imaging,
Telescope making,
and Caving:

http://home.neo.lrun.com/imaging

The ACA Picnic

by Peggy Stabholz

Those members who braved the heat and humidity to attend the ACA picnic were not only treated to great food and company but also to the surprise visit of Jeff Medkaff, a former ACA member now living and working in Arizona. Jeff spoke at the October meeting, and wrote a lovely article for ***Sky and Telescope*** on his experiences as a young member of the ACA. Recently, he has had two articles published in ***Sky and Telescope*** with more to follow.

Thanks to all the members who brought food and helped clean up.

Dark Sky News

by Lisa Swing-Corney

For those who have been wondering where I ve been and what s been going on with the *Dark Sky* movement, here s your answer. We have been involved in moving preparing our house to sell, looking for a new home, dealing with real-estate and other officials, securing a mortgage, selling our home, and on and on it goes. We are now in our new residence on a heavily wooded lot next to a home with a caved in roof caused by one of our trees falling during a violent storm shortly after we moved in. I wish to announce that we re going to be having a *Dark Sky Committee* meeting here soon. Please plan on bringing chainsaws, axes and heavy rakes.

Lights On / Lights Off Public Program

by Peggy Stabholz

We were able to have two-thirds of the scheduled events the solar program and the wiener roast before the rain started! We will be selling the rest of the food at the next scheduled observatory event. We also have the space poster (signed by Alan Beam!) which will be raffled then; one raffle ticket will be $1 and six tickets will be $5.

Thanks to all these members who helped: Dale Knotts, Ray Paul, Rich Ruggles, Peggy Stabholz, Carl Hervol, Becky Kelly, Debbie Crenshaw, Gregg Crenshaw for giving the solar program and Jim Anderson for cooking the dogs.

Asteroid Fly-by to Introduce the Millennium

By Douglas Mason

Launched on October 24th, 1999, the Deep Space 1 mission [1] began a series of missions all contained within NASA s New Millennium Project [2]. Deep Space 1 s purpose was to test out 12 new technologies. Following that theme, the New Millennium Project will focus on the comprehensive experimentation of technology. However, recent news of the first mission in this project has created much concern and joy among scientists and astronomers today.

On July 29th, the Deep Space 1 passed an asteroid within 10 miles of its surface [3]. This is the closest any human craft has ever been to an asteroid. With this fly-by, NASA was also able to fully complete their testing of the AutoNav system. This method of navigation is used primarily when a craft is encountering uncertain territory in space. It uses variables, probability, and a hierarchy of objectives to choose the most beneficial path for the craft as it progresses. Only the general direction is given from ground observatories and stations, but most of the detailing is done onboard. This will soon allow for more autonomous, less expensive, and less laborious missions.

Other aims of the Deep Space 1 mission included a new type of propulsion that uses ionized xenon gas to propel the craft. As opposed to the usual chemical propellants that are ignited to offer movement, ion propulsion simply drives the gas out of the tanks. This is much more efficient than other propulsion technologies, but offers little acceleration compared to them. However, only 85 kilograms will give the craft over 20 months of thrust. This is ideal for missions of asteroids and comets, and as such is being used solely for those missions.

Following Deep Space 1, three other Deep Space missions will have launched by 2004. The New Millennium Project plans to launch another series of missions that plan to observe Earth using new instruments. One of particular interest uses laser radar to measure wind velocity using SPARCLE [4], and another tests out land imaging techniques to be used for later research on Earth and other planets [5]. Others include geological, meteorological, and planet-related tests, and plan to increase our knowledge of our humble world.

[1] You can access the Deep Space 1 Home Page at

http://nmp.jpl.nasa.gov/ds1/

and learn more about related missions on the craft

[2] You can access the New Millennium Project Home Page at:

http://nmp.jpl.nasa.gov/index_menu.html

Information on all of the missions is discussed there in depth.

[3] Specific details of the fly-by: The Deep Space 1 encountered asteroid 9969 Braille at 9:46 p.m. Pacific time Wednesday, July 28 (04:46 Universal Time July 29) from NASA s Press Release on the Deep Space 1 Mission Status

[4] SPARCLE, the major focus on Earth Observer 2, stands for Space Readiness Coherent Lidar Experiment. It uses laser light radar to accumulate wind statistics. More can be found at

http://wwwghcc.msfc.nasa.gov/sparcle/

[5] Earth Observer 1 will launch to orbit Earth December, 15th. It will use an assortment of new technologies, many focused on land imaging. More can be found at

http://eo1.gsfc.nasa.gov/miscPages/home.html

Special Events

by Frank Koby

Date: August 28th
Place: Barberton Library
Time: 12 noon to 8 PM
Event: Science Day
Note: I think lunch is provided

Date: September 17th
Place: the ACA Observatory
Time: 5PM 'til ?
Event: Chemical Association picnic

OTAA News

The MVAS (Mahonning Valley Astronomical Society) is having their annual OTAA (Ohio Turnpike Astronomer s Association) Convention at the site of their observatories on Saturday, Aug 14th beginning at 5:00 PM or so. It s always a wonderful event, much anticipated and well attended. Please bring a covered dish or other culinary delight to share with others. Having 2 observatories and lots of guests scopes with which to observe, you should really try to be there. If you can only make it to only one OTAA event this year, this should be the one if for no other reason than the food and comradery, not to mention the great opportunity for observing.

Directions to the MVAS OTAA Convention site:

1) Take RT-80 (Ohio Turnpike) EAST to the RT-5 exit
2) Turn RIGHT (west) on RT-5
3) Proceed 1½ miles to SR-534
4) Turn RIGHT (north) on SR-534
5) Proceed 2½ miles and follow signs to parking on the right side of the road

Alternative method, for those wanting to avoid the highways

1) Take SR-303 EAST until it dead ends at SR-82
2) Make an easy RIGHT (east) on SR-82
3) Proceed 2/10th mile to first intersection
4) Make a hard LEFT (north) onto SR-534
5) Proceed approximately 3/10th mile and follow signs to parking on the right side of the road.

The Night Sky By Email!

By Dave Jessie

The newsletter you know the one you re reading now is ready for distribution by email! I ve recently acquired ***Adobe Acrobat 4.0*** software which creates **PDF** (Portable Document Format) files readable on any PC. It isn t necessary for you to have the same software I used to create the documents, just the **PDF** files that I ll email to you as attachments. All you need is an email service capable of accepting attachments, the files I ll send you and the ***Adobe Acrobat Reader***, available from their web page at no charge! Just follow these steps:

1) Visit http://www.adobe.com and follow instructions to download and install the ***Acrobat Reader 4.0***
2) Receive your email as usual and download the attached *.PDF file(s)
3) Open the attachment(s) in ***Acrobat Reader*** and you ll have the documents on your screen in all their splendor. This will allow for full graphic capabilities including color! to be realized for the first time in our little publication.

Can you tell I m excited about this??!!

Now, here s what I need from you

1) Email me at KC8ARB@hotmail.com and let me know that you re interested in participating.
2) Let me know if you want the email version ***IN ADDITION TO / OR INSTEAD OF*** the mailed hardcopy. These options may change as the success of the project is reviewed.

You really can t imagine how much time, effort and money could be realized if a large portion of our membership could accept this as an alternative to the printed & mailed copy.

Please Let me know your feelings on this!!!

The Road to Mahonning

(Sounds like an old Bing Crosby, Bob Hope movie title, doesn t it!?)

August 1999

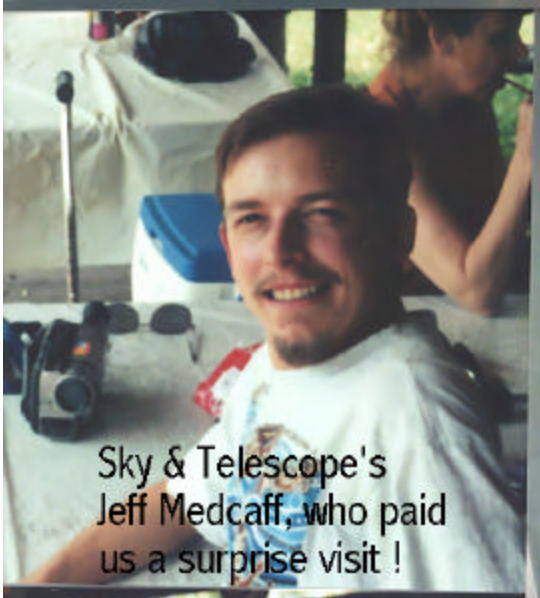
Note: Times are in EDT (Eastern Daylight Savings Time)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 SR: 6:22 SS: 20:43 MR: 23:20 MS: 10:34	**2** SR: 6:23 SS: 20:42 MR: 23:52 MS: 11:40	**3** SR: 6:24 SS: 20:40 MR: None MS: 12:48	**4** SR: 6:25 SS: 20:39 MR: 0:25 MS: 13:56 LQ: 13:28	**5** SR: 6:26 SS: 20:38 MR: 1:01 MS: 15:06	**6** SR: 6:27 SS: 20:37 MR: 1:42 MS: 16:15	**7** SR: 6:28 SS: 20:36 MR: 2:29 MS: 17:22
8 SR: 6:29 SS: 20:34 MR: 3:22 MS: 18:24	**9** SR: 6:30 SS: 20:33 MR: 4:22 MS: 19:20	**10** SR: 6:31 SS: 20:32 MR: 5:27 MS: 20:09	**11** SR: 6:32 SS: 20:31 MR: 6:35 MS: 20:51 NM: 7:10 SE: 6:04	**12** SR: 6:33 SS: 20:29 MR: 7:42 MS: 21:27 *Perseid Meteor Shower* program at Observatory	**13** SR: 6:34 SS: 20:28 MR: 8:48 MS: 22:00	**14** SR: 6:35 SS: 20:27 MR: 9:52 MS: 22:30 *MVAS - OTAA* Convention
15 SR: 6:36 SS: 20:25 MR: 10:54 MS: 22:59	**16** SR: 6:37 SS: 20:24 MR: 11:54 MS: 23:28	**17** SR: 6:38 SS: 20:22 MR: 12:52 MS: 23:57	**18** SR: 6:39 SS: 20:21 MR: 13:50 MS: None FQ: 21:48	**19** SR: 6:40 SS: 20:19 MR: 14:46 MS: 0:29	**20** SR: 6:41 SS: 20:18 MR: 15:42 MS: 1:04	**21** SR: 6:42 SS: 20:17 MR: 16:36 MS: 1:43 Fall Constellation Program
22 SR: 6:43 SS: 20:15 MR: 17:27 MS: 2:27	**23** SR: 6:44 SS: 20:13 MR: 18:14 MS: 3:17	**24** SR: 6:45 SS: 20:12 MR: 18:58 MS: 4:11	**25** SR: 6:46 SS: 20:10 MR: 19:38 MS: 5:10	**26** SR: 6:47 SS: 20:09 MR: 20:15 MS: 6:13 FM: 19:50	**27** SR: 6:48 SS: 20:07 MR: 20:49 MS: 7:17	**28** SR: 6:49 SS: 20:06 MR: 21:21 MS: 8:24 Science Day Barberton Library
29 SR: 6:50 SS: 20:04 MR: 21:54 MS: 9:31	**30** SR: 6:51 SS: 20:03 MR: 22:27 MS: 10:39	**31** SR: 6:52 SS: 20:01 MR: 23:02 MS: 11:48				

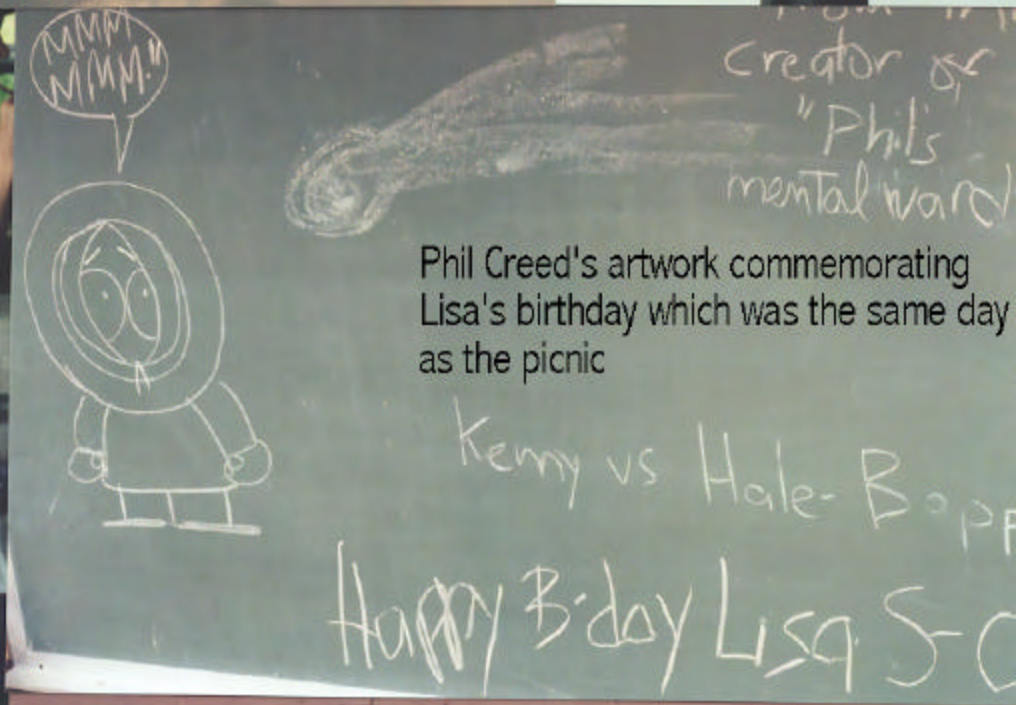
SR	Sun Rise	NM	New Moon
SS	Sun Set	FQ	First Quarter
MR	Moon Rise	FM	Full Moon
MS	Moon Set	LQ	Last Quarter
SE	Solar Eclipse	LE	Lunar Eclipse

The skies the day of the picnic

Light shield installed by our own Jeff Darr



Sky & Telescope's Jeff Medcaff, who paid us a surprise visit !



Phil Creed's artwork commemorating Lisa's birthday which was the same day as the picnic

The editor, trying to stay cool

Some of the ACA picnicers seeking relief from the sun's rays

The Astronomy Club of Akron
5020 Fishcreek Road
Stow, OH 44224-1934

For more information call: 330-688-9043

Yes ! I want to become a member of the Astronomy Club of Akron.

(PLEASE PRINT)

NAME _____ **PHONE** _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIPCODE** _____

EMAIL ADDRESS _____
(For Planned Optional Email Delivery of The Night Sky)

Astronomy Club of Akron annual memberships renew in the month of May.

Adult (ages 18 and older).....**$20.00**

Junior (ages 12 to 17) **$15.00**

Added Adult member .....**$ 5.00**

Family Membership.....**$30.00**

The Astronomy Club of Akron
704 S. Sheraton Circle
Akron, OH 44319

The Astronomy Club of Akron

Upcoming Events

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August 14th Mahonning Valley Astronomical Society ***OTAA Convention***
August 21st ACA Observatory ***The Fall Constellations***
August 28th Barberton Library ***Science Day***