



# The Night Sky

The Newsletter of  
The Astronomy Club of Akron

www.acaoh.org

Volume 33 Number 3

March 2011

Next Meeting: Friday, March 25, 2011 8:00PM.

## Ramblings of the President

By Dave Jessie



**Did you Mark your calendars for Wednesday March 16, 2011 at 7:00PM?**

You should have! Recall from last month's article that we have a special ACA MEMBERS-ONLY event at the Cleveland Museum of Natural History. This event will include a private guided behind-the-scenes tour of the museum displays, the Mueller Observatory and the Shafran Planetarium. These presentations have been graciously offered and will be provided by Clyde Simpson, Observatory Coordinator, Department of Astronomy, Cleveland Museum of Natural History. Clyde will give us a special presentation in the Planetarium geared toward our experience level rather than the shows presented to the general public. If you haven't seen the vastly improved planetarium, you're in for a real treat! In addition, if the night is clear, we'll be able to view through the 10.5" refractor built by the Warner & Swasey Co. of Cleveland in 1899. Just seeing the **observatory**, telescope and mount are enough to bring tears to my eyes. We'll be able to visit the observatory even if the skies aren't clear (Please, let it be clear!). This



**Venus in broad daylight as viewed down the length of the Warner & Swasey Co. 10.5 inch refractor. Ralph Mueller Observatory, Cleveland Museum of Natural History. Photo by ACA member Jason Shinn, September 15, 2007.**

event is EXCLUSIVELY for ACA members and family members. The cost is \$9 per adult and \$7 per child to be paid at the door upon entering the Museum. Of course, if you happen to be a card-carrying member of the Museum, there will be no charge for you. This fee includes admission to the Museum & Planetarium. Simply tell the clerk that you and your party are members of the ACA and that you're Clyde Simpson's guests for the evening. That's all there is to it. The normal costs are \$10 per adult to enter the museum plus \$4 per person for a planetarium show. Clyde has done the best he can for us on the cost. Parking? We're on our own. Parking

in the museum parking lot is \$2/hr per car with a \$15 maximum. For additional information on the Cleveland Museum of Natural History, visit: <http://www.cmnh.org> For additional information on the Mueller Observatory and Shafran Planetarium, visit: <http://www.cmnh.org/site/AtTheMuseum/PlanetariumandObservatory.aspx>

All this information and more is on the ACA Webpage at: <http://www.acaoh.org> A Google map and directions are available at the aforementioned site.

(con't page 4)

**DAYLIGHT SAVINGS TIME - MARCH 13, 2011 - 2:00AM EST - SET CLOCKS FORWARD ONE HOUR**

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## 2011 - March Activities Calendar - 2011

### Club

March 5 - OBSERVATORY: Public Event.

07:00 pm EST (2011 03 06 00:00 UT)

March 13 - **BEGIN DAYLIGHT SAVINGS TIME**

**Set your clocks forward one hour.\*\***

02:00 am EST (2011 03 13 07:00 UT)

March 16 - MEMBERS ONLY: Tour of CMNH.

07:00 pm EDT (2011 03 16 11:00 UT)

March 25 - KIWANIS: General Membership Meeting.

08:00 pm EDT (2011 03 26 00:00 UT)

March 26 - OBSERVATORY: Public Event.

08:00 pm EDT (2011 03 27 00:00 UT)

### Celestial\*

March 4 - New Moon at 20:46 UT.

March 6 - Moon at apogee (farthest) at 8h UT.

March 12 - First Quarter moon at 23:45 UT.

March 19 - Full Moon at 18:10 UT.

March 19 - Moon at perigee (closest) at 19h UT.

March 20 - Vernal Equinox at 23:21 UT

March 23 - Mercury at greatest elongation at 1h UT. (pm)

March 26 Last Quarter moon at 12:07 UT.

\*Source: [www.skymaps.com](http://www.skymaps.com)

\*\*Source: <http://www.nist.gov/pml/div688/dst.cfm>

## The Treasurers Corner

By Lew Snodgrass

### A word from your Treasurer

Dear ACA members, I would like to acknowledge Vic Sakar's \$15 donation. I know several members have donated in the past, especially those donating their 50/50 raffle winnings. From now on I will endeavor to acknowledge any and all donations to the ACA. All donations are greatly appreciated regardless of size. Also, I know several of our members are contemplating donating telescopes and equipment to deserving new astronomers. Please inform me of any donations of the sort as they deserve recognition too.

I am still looking for members who wish to update their subscriptions to either Sky & Telescope or Astronomy magazines. Please e-mail me or give me a call. [chrply@aol.com](mailto:chrply@aol.com) Cell 330-819-4886.

Thanks much,

Lew Snodgrass  
Treasurer, The Astronomy Club of Akron



Article by Lew Snodgrass  
ACA Treasurer.

### - PUBLISH YOUR ARTICLES AND IMAGES -

THE NIGHT SKY NEWSLETTER IS LOOKING TO PUBLISH YOUR ARTICLES! SHARE YOUR THOUGHTS, EXPERIENCES, STORIES, OPINIONS, LATEST ASTRO-IMAGES, AND ADVICE WITH YOUR FELLOW AMATEUR ASTRONOMERS.

ARTICLES MUST BE SUBMITTED BY THE SIXTH OF EACH MONTH. ARTICLES MUST BE RELEVANT TO OUR FORUM. ALL TEXT FILES SHOULD BE SAVED IN PLAIN ASCII FORMAT OR ANY VERSION OF WORD TO MINIMIZE IMPORT PROBLEMS. ALL IMAGES MUST BE SAVED IN .JPG FORMAT. SUBMIT YOUR ARTICLES VIA E-MAIL TO:

[truemartian@aol.com](mailto:truemartian@aol.com)

OR VIA SNAIL-MAIL:

JASON SHINN  
1025C Hemlock Hills Dr.  
Akron, OH 44313

## February Treasurer's Report

By Lew Snodgrass

2/1/2011 Through 2/28/2011

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Checking Beginning Balance	\$2,870.51
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### Income

January 50/50 Drawing	12.00
February 50/50 Drawing	12.00
Dues	30.00
Magazine Subscriptions*	116.00
Donation: Vic Sakar	15.00

<b>Total Income</b>	<b>\$185.00</b>
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### Expenses

Insurance	375.00
Magazine Subscriptions*	133.90
Website Expense	45.00

<b>Total Expenses</b>	<b>\$553.90</b>
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<b>Income Less Expenses</b>	<b>\$368.90</b>
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Checking Ending Balance	\$2,501.61
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Charter One Ending Balance	\$2,501.61
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Difference	\$0.00
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Savings Opening Balance	\$5,930.70
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Earned Interest	0.50
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<b>Savings Closing Balance</b>	<b>\$5,931.20</b>
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Petty Cash	50.00
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Savings	5,931.20
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Checking	2,501.61
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<b>Total</b>	<b>\$8,482.81</b>
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\*Subscription details available upon request.

Article by Lew Snodgrass  
ACA Treasurer

## Ramblings (con't)

The address of the Museum is:

Cleveland Museum of Natural History  
1 Wade Oval Drive  
Cleveland, OH 44106-1701  
Phone: 216-231-4600 or  
toll-free 800-317-9155

What happens if yet another nasty winter storm hits making travel to Cleveland hazardous? We'll simply cancel and reschedule another Wednesday at 7:00pm. Since we'll pay at the door, no harm done. When working with Clyde to schedule this visit, we really tried to make arrangements for either a Saturday or Sunday afternoon, but scheduling conflicts, personnel responsibilities

and other restrictions at the museum rendered weekends unavailable. Wednesday evening turned out to be our only opportunity. Don't worry, we'll have a great time, and learn a lot in the process.

Many thanks to John Crilly for speaking on solar observing gear at the February meeting. John's talk was informative and timely given that the Sun has recently awakened from an overly long solar minimum. Besides, observing the Sun is not affected by light pollution. ;^) While we're on the topic of February's meeting, my deepest most sincere apology for the key fiasco causing the half-hour delay in the start of the meeting. Steps have been taken to assure that won't happen again. I promise to make

every effort to assure that meetings will start on time.

## Keeping Track of Club Events

Please visit our Webpage and click on the "Yearly Calendar" at the left side of the home page. Here you'll find a list and clickable link of every single ACA meeting, observatory event, outreach event and members-only event that's been scheduled. If an event comes up suddenly, it will have a clickable link on the Yearly Calendar.

Clear skies, everyone!

*Article by Dave Jessie,  
ACA President.*

## Minutes of the February 25, 2011 General Meeting

By Mary Pickelsimer

**8:30PM** An issue with our access to the facility cause the call to order to be delayed by half an hour. This month's presentation was the equipment used for solar observations by John Crilly.

**9:23PM** Break.

**9:45PM** Business meeting called to order.

### Treasures Report:

- Reporting January 2011 activity.
- Renewal of Sky and Astronomy magazines can still be done through the club to receive a discount.

### Observatory Director's Report:

- The *Observers Handbook 2011* will be kept at the observatory.
- First Star Party of the year will be March 5, 2011
- Messier Marathon 2011 – Saturday April 2, 2011

### New Business:

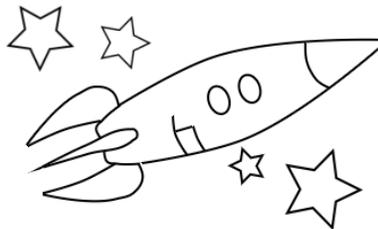
- Lecture at the Cleveland Museum of Natural History, Thursday March 10, 2011. "Search for the most distant galaxies and the end

of the cosmic dark ages"

- Tour of the Cleveland Museum of Natural History, Wednesday March 16, 2011. (see ACA website for full details)

**10:25PM** Meeting adjourned. Next general meeting will be March 25, 2011.

*Article by Mary Pickelsimer,  
ACA Secretary.*



## March Membership Meeting - March 25, 2011 8:00pm

When will we travel to the stars? Most of our membership is old enough to remember watching the Apollo missions to the Moon on television in the 60's & 70's. In 1981 the launch of the first Space Shuttle into orbital flight seemed to be a step back from the logical progression set forth by the Mercury, Gemini, and Apollo programs. Space travel to the

stars will be much more challenging than any of those programs. The nearest star is 100 million times more distant than the Moon. Flying to the stars will require technologies not dreamed of yet. And when we do go to the stars, our journey will not be limited by our technology as much as being limited by the laws of nature. Time dilation, an effect of Special Relativity, provides a means for a space traveler to reach parts of the Universe we can only observe with our telescopes today. Our lecture for our March meeting will examine how time dilation works and how it will enable us to fly to the stars. We will use thought experiments similar to the ones Einstein used to understand the concepts of time dilation. Warning: this lecture includes some math; although, nothing you shouldn't have already encountered in high school. The hope is that we will acquire a better understanding of the Universe that will foster more appreciation of what we see as we look through the eyepiece. So if you're willing to take a journey through space and time, come out to our membership meeting on March 25th.

*Article by Ron Kalinoski,  
ACA Observatory Director.*

## Observatory Report

By Ron Kalinoski

Our first star party of the year was a washout. On March 24th we'll try again. And on April 2nd, we'll hold our annual Messier Marathon. Lots of members are awaiting this special event. For new members, astronomy clubs worldwide schedule Messier Marathons around the Vernal Equinox and New Moon. At this time of year, all 110 Messier objects can be viewed during the course of one observing session. Astronomy clubs hold competitions to see who can observe the most Messier objects and our club participates in this tradition. We always have a good time at this event. John Shulan cooks up a great tasting pot of chili to go with the best free coffee in Akron that will be brewing all night. There will be two categories of telescopes: manual and computer-aided. To entice the competition, there will be a first place prize for each category: Giles Sparrow's book *Cosmos*. This over-sized book contains stunning photographs from Voyager, Galileo, Cassini, and Hubble. The photographs cover the full spectrum of celestial objects, each accompanied with text to explain the image. Second place finishers will receive a Messier Marathon observing certificate. So come out early to the Messier Marathon to set up your equipment, have a bowl of chili and a cup of coffee and observe with a great group of amateur astronomers.

Four years ago we did an outreach program for the Boy Scouts at Camp Butler in Peninsula. We had great skies that night with Saturn being the highlight of the evening. This group has asked ACA to host a star party being held on April 29th. Five local Boy Scout troops will be at the camp totaling about 100 scouts. Saturn reaches opposition on April 3rd, so it should be well placed for evening observing. The site is located in the Cuyahoga Valley National Park and access is by dirt road. This is one of the darkest observing sites in the area. The scouts will be working on some

requirements for their astronomy merit badge during the weekend camp. If you would like to show the scouts the wonders of the night sky, please come out to this event.

The Green Public Library has asked us to give a presentation at the library as part of their public education program. The presentation will be about an hour and if skies permit, we'll have a short observing session afterwards. If you're interested in helping out, let me know.

Thanks to Tom Mino for donating *Observer's Handbook 2011*. This book will be kept at the observatory for use at star parties. The book is a good reference published by The Royal Astronomical Society of Canada and can be checked out for home use between public star party events.

*Article by Ron Kalinoski,  
ACA Observatory Director.*

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## Pilgrim's Progress Toward A Scope Loan Program

By Robert Benedict



As reported in the last newsletter I had suggest that the ACA explore sponsoring a telescope loan program at the January club meeting. Based on the interest I took on some initial exploration. I contacted the Akron-Summit Public Library and did get a response of interest. They are researching and discussing internally and will come back with a response in one to two weeks.

One resource is the Focal Point column on the last page of the December 2010 Sky and Telescope which describes "The Library Telescope Program", which is a cooperative outreach effort between the New Hampshire Astronomical Society and New Hampshire Public Libraries. The scope of choice is the Orion Star- Blast 4.5. An interesting aspect of the program is that each scope has a "foster parent" that cares for the scope. That person periodically cleans and adjusts the telescope, and acts as an astronomical

resource to the library and its patrons. A discussion of the program, including a copy of the S&T article, is available from the Astronomy Outreach Foundation web site at:

<http://www.astronomyoutreachfoundation.org/2010/12/20/the-library-telescope-program/>

More detailed information, including a great program overview and their instruction manual, is available at the New Hampshire Astronomical Society web site:

<http://www.nhastro.com/ltp.php>

A quick web search revealed that the North Canton Public Library already has an Orion StarBlast Telescope available for loan.

<http://www.ncantonlibrary.org/departments/Circulation/telescope.htm>

Their program loans it out for a 14 day period and includes asking for a \$20 security deposit. The program was initiated by the donation of a scope to the library.

I would appreciate it if anyone interested in active participation in the telescope loan program effort would contact me through the email list.

Clear Skies  
Bob

*Article by ACA member  
Robert Benedict.*

# SELECTING NARROWBAND SOLAR OBSERVING EQUIPMENT

By John Crilly

This article will be mostly a rehash of material presented at the February meeting of the Astronomy Club of Akron. Those who were present may skip it or it can be considered a refresher!

I'll begin by discussing why solar observing has gained popularity recently, and why those who haven't tried may want to consider looking into it. I'll mention historical and current methods of observing the sun in white light (broadband). Then I'll get to my primary objective – describing currently available gear for observing the sun in narrowband; specifically in the hydrogen-alpha (H-alpha) band. I'll stick with the more popular and affordable equipment lines. I want to help folks to understand what is meant by the terms for and characteristics of the various components of such a system so they can make an informed choice when selecting equipment. I'll leave the “sort-of-narrowband” options such as calcium-K for another article.

## WHY NOW?

Our sun has recently awakened from a prolonged and deep period of relative inactivity. There hasn't been much to see with simple and inexpensive equipment. Since folks haven't been using that gear, they haven't been moving on to more elaborate systems to join those already so equipped (who have been cheerfully observing right along!). Now there's a boom in narrowband equipment sales.

Also, the mid-range suppliers are offering much more economical narrowband setups (I'll explain how they are doing that farther down the page) so the price of entrance into H-alpha observing is plunging.

## WHITE LIGHT

When we speak of white light solar observing, we mean that we are looking at the full spectrum. We may be using color filters, but we aren't completely blocking any wavelengths. We can see the photosphere of the sun. We may see sunspots and the activity surrounding them. We may see the “rice grain” effect of the boiling outer surface. We may even detect filaments.

Early white light systems were based on small refractors. Sometimes a nearly opaque filter was attached to the eyepiece (bad idea – NEVER do this!). More often, a white screen was mounted near the eyepiece and the sun's image was projected onto it. The higher-end setups used a Herschel wedge. These are similar in form to a diagonal prism but pass only a tiny portion of the light and heat to the eyepiece, dumping nearly all of it in a different direction. This was the best, but the most expensive option.

Today we have front-mounted filters available so we can use other telescope designs, and aren't limited to small apertures. Early front-mounted filters consisted of optical glass with a metal coating applied. These are still produced today. Most of the light and heat is rejected and only a safe amount is permitted to pass through the telescope and into the eyepiece. Metalized-film filters are more common these days which work the same way but are generally considered to offer less distortion and permit higher resolution. They are very inexpensive and very effective – but delicate. The Herschel wedge is enjoying renewed popularity and offers an even better view, but is restricted to refractor use.

## HYDROGEN-ALPHA

The first narrowband filters commonly seen by amateurs used a solid etalon; two reflective layers separated by a solid medium. They were expensive to produce so they had to be small. The center frequency varied with temperature as the medium expanded and contracted so

they had to be either temperature-controlled by a heater and thermostat or used within a narrow range of temperatures. An energy rejection filter (ERF) was installed at the aperture of the telescope to cut off infrared light and to control the amount of heat entering the instrument. A blocking filter (BF) was attached to the etalon. The small size of the etalons meant that they had to be used at the eyepiece end of a telescope and they required a very shallow light cone (F ratios of F/20 to F/30 were common) so they were best used for high magnification observing of small features. Such filters are still offered by Daystar and others.

Coronado figured out a way to build an air spaced etalon which, while still expensive, could be produced in sizes sufficient for use at the aperture of a telescope. Only a blocking filter was required at the rear of the telescope. This removed the requirement for high F ratios and it became easy to observe the entire solar disk. Temperature stability was greatly improved and they could be used at whatever the ambient temperature happened to be. A 90mm air spaced etalon cost little more than a small solid etalon and offered much greater flexibility in use. The filters could be mounted in tandem, permitting narrower bandwidths (a single air spaced etalon can do a little better than .7 Angstroms; two such filters “stacked” can go to less than .5 Angstroms). The center frequency was adjusted by changing the angle of the filter, as the center of its bandpass varies slightly with the angle of incidence of the light cone. Because these units were intended to be used ahead of the telescope objective, an energy rejection filter was incorporated into the filter assembly.

Some systems were offered using an external full-aperture etalon combined with a smaller internal etalon, placed where the light cone was narrower. This provided the tighter bandpass of two filters while

## SOLAR (con't)

retaining much of the advantage of a front-mounted filter at a lower cost than using two front filters. The disadvantage of the internal filter is that they tend to exhibit an uneven bandwidth; a portion of the FOV (the sweet spot) will have a narrower bandpass than the rest of the FOV and it may be necessary to move the telescope to place the area of interest into that better area.

More recently, Coronado introduced the Personal Solar Telescope, in which an internal air spaced etalon followed by a blocking filter was mounted within a telescope and energy rejection filter coating was added to the objective. The internal filter was smaller than the aperture of the telescope (thus less expensive) but not subject to the issues of a rear-mounted unit. It was a compromise but a tremendous value and brought lots of new people into the realm of narrowband solar observing. The initial design of the objective was flawed and many units deteriorated in use. It wasn't a safety issue but a performance problem. After Meade purchased Coronado they redesigned the objective and provided refits to units in the field at no charge (a solution that was both very ethical of and, no doubt, very expensive for Meade!).

Lunt Solar Systems was formed with the announcement of a plan to place an air spaced etalon of their own design inside a telescope and to run the light through it twice, gaining the narrow bandpass of a double filter system for the cost of only one filter. They announced the product and began taking orders and deposits. The idea proved to be "unproduceable", so double etalon systems were used to fill the pre-orders at the single etalon price (a solution that was both very ethical of and, no doubt, very expensive for Lunt!). They now offer primarily dedicated units using a single internal etalon but offer larger

filters for external use with other telescopes or for stacking. Blocking filters are provided for the rear of the telescope, similar to those used by Coronado. Energy rejection filter coatings are applied to the objectives. A recent enhancement is their optional pressure tuning, which places the air spaced etalon inside a sealed chamber and adjusts the center frequency by varying air pressure within the chamber and thus flexing the glass plates to vary the spacing. Lunt currently offers H-a telescopes in the aperture range of 35mm through 152mm, and external H-a filters in the range from 50mm through 100mm.

The price pressure placed on Coronado by the internal etalon Lunt units caused Coronado to recently drop their front etalon Maxscope series and to introduce a less expensive line of internal etalon models (SolarMax II). Again, energy rejection filters are applied as coatings to the objectives and rear blocking filters are supplied. Coronado currently offers H-a telescopes and filters in the aperture range of 40mm through 90mm.

Today if you want a front etalon unit at a mid-range price you must buy a filter set (front etalon/ERF plus blocking filter) from Lunt or Coronado and install it on your own telescope.

### WHAT WILL I NEED?

Finally – the point of the article. I'll neglect white light and rear etalon systems for this part, and look at the decisions required to select the more popular and common gear. This means we're shopping for either a dedicated H-a telescope or a separate filter set for use with our own telescope. First – which of those do we want?

### DEDICATED OR ADD-ON?

A dedicated system is more foolproof. It won't have a conventional finderscope that you can

forget to block or remove (even a Telrad can be damaged by sunlight). The etalon is inside so you can't forget that either. Keep track of the blocking filter and you are all set (and even that component is permanently installed on some systems). You won't have to spend extra to buy an adapter to mount the filter. The cost for a given aperture will be less than that of a full-aperture external add-on filter because the internal etalon is smaller and less expensive to produce. Even if you add an external filter to make a double stacked unit you'll pay for only one full size external filter. The tradeoff is that the internal etalon leaves you open to the possibility of a sweet spot issue.

An add-on filter set lets you gain more use of a telescope you already own. You'll have a full aperture filter for top performance. You won't need to bring an additional, separate telescope for daytime use at star parties. If your instrument is in an observatory you won't have to swap telescopes to switch from night to day observing or imaging. The tradeoff is that you'll have to pay for at least one, and possibly two, full aperture filters so the cost for a given aperture will be significantly higher.

It should be noted that with either system an energy rejection filter is incorporated into the system at some point so it isn't generally necessary to install one separately. This does mean that one must not casually mix and match components not meant to be used as a system – it's necessary to ensure that an energy rejection filter is present. Installing an etalon intended for internal use (thus no ERF) onto a telescope intended for use with an external filter incorporating an ERF would result in a system with NO ERF.

### THEN WHAT?

When shopping for either setup you still have three decisions to make. Single or double etalon? What aperture? What size blocking filter?



# NEW IMAGES



by John Crilly

# The Night Sky

Newsletter of the Astronomy Club of Akron

c/o Jason Shinn, Editor  
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Akron, OH 44313

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The Astronomy Club of Akron  
c/o Lew Snodgrass, Treasurer  
1865 Stabler Rd  
Akron, OH 44313-6124

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

[www.acaoh.org](http://www.acaoh.org)

(PLEASE PRINT)

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

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

ADULT (ages 18 and older)  \$30.00

JUNIOR (ages 12 to 17)  \$15.00

ADDITIONAL ADULT member  \$15.00

FAMILY MEMBERSHIP  \$40.00

Visit us on the Web at [www.acaoh.org](http://www.acaoh.org).