OBSERVATIONS

A MONTHLY PUBLICATION OF THE

Chester County Astronomical Society

FEBRUARY 2000

(VOLUME 8, NO. 2)

http://members.tripod.com/~ccas_2/ccas.html

CCAS February Meeting

DATE: **Tuesday February 8, 2000**
TIME: 7:30 p.m. EST
PLACE: Department of Geology and Astronomy Lecture Room (Room 113 – Boucher Building) West Chester University
LOCATION: South Church Street West Chester, PA (see map)

Parking is available behind Sykes Student Center on the south side of Rosedale Avenue, and behind the Bull Center at the corner of Rosedale Avenue and South High Street. If you arrive early enough, you may be able to get an on-street parking space.

Our guest speaker this month is Professor Laurence E. DeWarf of Villanova University. Professor DeWarf will talk to us about his research into Solar-type stars (in case you're not sure what that means, it means other stars that are similar to our Sun). His research assistant, Villanova junior Joe DePasquale, will also be involved in this presentation.

Professor DeWarf received his B.S. degrees in Physics and Astronomy from the University of Arizona, and received his Master Of Science degree from the University of Wyoming. His research interests include: Young Stellar Objects, Extragalactic Binary Stars, and Solar-type Stars.

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Public Open House: F & C Observatory

There will be a **FREE** public open house program at the University of Pennsylvania's Flower & Cook Observatory in Malvern, PA on Friday February 25, 2000. The program starts at **8:00** p.m. EST with a talk entitled "Survey of the Universe" by Dr. Deb Goldader of the University of Pennsylvania. This talk is a general, pictorial introduction to astronomy, targeted at 10-year-old children. If CCAS members can bring their telescopes along to help with skygazing after the talk, that would be greatly appreciated! If the skies are clear, there will also be observing with the Observatory's telescopes. Children are always welcome at the FCO Open House programs, as long as an adult accompanies them. The Observatory is located on Providence Road, just west of the intersection with Warren Avenue. A map is included on a later page.

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CCAS February Observing Session

The next CCAS Observing Session will be on Friday February 4, 2000 starting at about 6:00 p.m. or earlier, if you can get there earlier. If it's too cloudy on Friday, then the Observing Session will be on Saturday February 5, 2000. At the observing sessions, there will be help available to set up and use your telescopes. If you're having trouble using your telescope, or finding your way around the sky, come on out and get some assistance. All members are invited whether they have a telescope or not. Telescope owners are always glad to share the view through their `scope. CCAS Observing Sessions are always free of charge. Children are always welcome as long as an adult accompanies them. Make sure to dress warmly, as it gets cold rather quickly at this time of year.

To get to the observing site at the BVA, turn off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go up the farm lane to the left; it's about 800 feet or so to the top of the hill. If you arrive after dark, please turn off your headlights and just use parking lights as you come up the hill.

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Telescopes and Members Needed!

There is a star night for a den (7 3rd graders) of Cub Scouts of Cub Scout Pack 7 at the Flower & Cook Observatory on Friday February 11, 2000. We could use some help, with or without telescopes, to assist with this event. Those without telescopes can assist with pointing out stars, planets, and constellations. These events are always fun and fulfilling, because many of these children will be looking through telescopes for the first time. Remember the first time you saw Jupiter or Saturn through a good telescope? Share the magic!

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Report on CCAS 20" Telescope Project

Observing Chair Ed Lurcott reports that the 3.5" secondary mirror has arrived, as has the light shroud. We now have all the parts of the Telekit from AstroSystems. Further, all the parts for the upper cage assembly have been sanded and prepared for assembly. The next step is to epoxy that assembly together, and clamp it until the epoxy sets securely. Then we can start on the base assemblies.

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President's Message February 2000

The more we find out, the less we know. It sounds like a paradox but, with respect to astronomy, it seems to be true. This was never more apparent than at last month's meeting of the American Astronomical Society where some of the latest research findings were publicized. Consider the following:

1) Scientists could never prove the existence of a black hole at the center of the Milky Way galaxy until Chandra, the X-ray telescope launched a few months ago, picked up faint x-ray emissions never before detected coming from the exact position of the radio source Sagittarius A, the point 26,000 light years away that scientists believe is at the center of our galaxy. While scientists expected the black hole to be there, the faintness of the x-rays surprised them. It is believed to be a 2-million-solar-mass black hole that should be putting out a heck of a lot of energy. But as Penn State astronomer Gordon Garmire expressed, "The x-rays are puny, really nothing remarkable. This is a real puzzle."

2) Scientists say Chandra could also answer long-standing questions about the universe's x-ray background glow. Is it left over from the Big Bang or is it the result of millions of x-ray sources spread over the whole universe? Chandra's findings support the latter hypothesis. "This is a major discovery" said NASA's Alan Brunner. "A Holy Grail of x-ray astronomy" is within reach. Richard Mushotzky of NASA's Goddard Space Flight Center said that while the findings may solve an old mystery, they raise a new puzzle as well. "Most of the radiation surely comes from supermassive black holes," he said. "What we don't understand is where they are in detail, how many there are and what types of objects they're located in."

So the quest continues. Many more interesting findings were reported on at the AAS meeting. But they all seem to expand the volume of the unknown. More knowledge gained, more puzzles uncovered. It would be maddening if it weren't so fascinating. It is what makes the science of astronomy the most compelling of all.

Mike Turco

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Observing Log: Friday October 2, 1998

by Jim Anderson

Last week I was transcribing some of my field notes into my permanent observing logbook. Yes, that's right, I'm two years behind on that task, but I'm getting better: a month ago I was three years behind! Maybe by the next millennium I'll finally be caught up.

In addition to observing notes and sketches, I sometimes jot down other things on the field notes. These usually go into the permanent log too. You may see notes like "10:03 p.m. dog barking off in distance" or "11:15 p.m. successfully chased away neighborhood skunk with red flashlight. Guess he/she thought the two red LED's were two glowing eyes." In that note, the word "successfully" translates to the phrase "without getting sprayed". Sometimes these little jottings really help bring back the whole mood of a good night: one like Friday October 2, 1998.

It was a really good night for observing, despite the Gibbous Moon. It was completely clear, with no wind. It was chilly, temp at 49º F and relative humidity at 55% at 8:00 p.m. EDT when I started. I was observing at home in Thorndale, so I even had my little digital temperature/humidity gauge out there next to the star charts and eyepieces. After warming up a bit on the Moon, it was time to "get to work". Since the Moon was so bright, it wasn't a good night for chasing faint fuzzies. So I was going to work on the A.L. Double Star list. Observing double stars is a good activity for bright Moon nights.

I started with ε Lyrae, the famed Double-Double. There are some sights you return to repeatedly when they're visible, no matter how many times you've seen them; it's kinda like visiting old friends. Then it was on to new territory, Draco. In fairly short order, ν^1-ν^2 Draconis, μ Draconis, 16/17 Draconis, ψ Draconis, and 40/41 Draconis gave up their photons to the rapacious appetites of Skywalker (my 10" f/6 Dob) and my retina. Then we launched an assault on the kingdom of Cepheus. β, ξ, and δ Cephei, as well as Σ2816, fell in fairly rapid order.

It was one of those nights. Everything was clicking. It's kind of hard to describe the feeling you get when you have a **really** good observing run going, especially when you're starhopping from place to place in the sky and not wasting time on wrong turns, etc. You really start feeling one with the telescope and the universe, meshing seamlessly as you step boldly off into the deep, making 15 degree sweeps across the sky: a quick look at the chart, "…it's about three finder-fields that-a-way…", zoom, and you wind up right where you wanted to go. Other starhoppers probably know what I'm talking about. People who start right out with computerized goto scopes probably don't know this feeling. I don't think that means computerized goto scopes are bad, mind you; it's just one of the trade-offs you make when picking a scope. In case you haven't guessed from what I said, there are also nights when nothing seems to click when starhopping and you end up frustrated: "I couldn't even find the Moon if it was at the end of my own arm!"

Sorry, I digress; back to October 2. Over to Cygnus to pick off 30/31, then over to Cassiopeia for M52 and double stars σ and η Cassiopeiae. While in Cassiopeia there's a note that says "light dewing began: 42° F, 86% rel. hum." M103 was logged next. And then comes the note that made the whole night.

First, a quick explanation of the scene: I live in a townhouse, with a common open area or "yard" out back, about an acre in

size; there are no fences. It's mostly grass, with a few large trees scattered about. The main road of the complex passes by on the other side of the "yard", about 80 or so yards from where I was observing, just behind our unit. None of the neighbors' "back yard lights" were on that night, and the nearest bright lights were the streetlights along the main road, which I had "blocked out" using the trees as shields. The only light was my red flashlight. I had become aware of some voices approaching in the darkness, from the direction of the road.

"10:25-10:55 p.m. EDT - One of the neighborhood boys and three of his high-school friends walked by, about 40 yards away. They went to Joe's house, 3 doors up. Two of them went inside with Joe; one remained outside. I could see his cigarette glowing in the darkness, and there was just enough light from the distant streetlights to tell he was standing there looking at me. Deciding that the best defense is a good offence, I stepped away from Skywalker and turned toward him so he could see I was talking to him, and asked if he'd like to take a look through the telescope. He seemed a bit startled, replied that he was wondering what I was doing, and that sure he'd love to take a look. He crushed out his cigarette and came over. I showed him M103 and explained what an open star cluster was. About that time the other three came back out, and he called them over excitedly, telling them they **had** to take a look though this telescope. After a quick round of introductions, they took a look at M103 while Convert #1 told them what it was. Then I showed them some double stars and explained what those were: two stars, one of which orbits the other, much like the Earth orbits the Sun and the Moon orbits the Earth. I also added that about 50% of the stars they can see are actually double or multiple star systems. They loved it. Then I showed them M31, the Andromeda Galaxy, and explained it was a big spiral galaxy like our own, the Milky Way, and that the Milky Way and M31 are the biggest members of the Local Group of galaxies, the gravitational anchors of the group. I pointed out that the 'fuzzy star' near M31 was actually M32, another smaller galaxy in orbit around M31. And then I added that under really clear dark skies, like up north in the Poconos, they would actually be able to see M31 with the naked eye despite the fact that it was 2.9 million light years away, explaining that meant M31 was so far away that the light they were seeing actually left M31 2.9 million years ago: they were looking backwards in time, so to speak, not just 'way out into space'. That really blew them away. Then we finished up with some high magnification scanning along the terminator on the Moon, chatting about the Moon, space travel, etc.

Then they had to go; they were on their way to a party. As we said good bye, I told them that they, and any of their friends, families, neighbors, were welcome to stop by any time I was out observing and take a look at whatever I was looking at. As they walked away chatting excitedly about what they had seen, I heard one of them say 'Man, if they taught science that way in school I'd have no trouble paying attention!'"

I went on to observe three more double stars before this note appears "11:30 p.m. EDT - Quit - Very heavy dewing, everything (shoes, charts, sketch pad) getting soggy. 39° F, 94% relative humidity." I wasn't all that tired, as I recall, but for some reason, finishing the A.L Double Star list didn't seem all that important anymore that night. It's kind of funny, the way things sometimes work out when you go stepping boldly off into the universe like that: you never know just where you might end up.

Clear Skies! Enjoy the journey!

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CCAS Lending Telescope

You can make arrangements to borrow the telescope for a month by contacting Kathy Buczynski (610-436-0821). Club members can borrow the 6" f/8 reflector for a month at a time; longer if no one else is waiting to borrow it.

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Calendar Notes

March 3/4, 2000: (Friday)	CCAS Observing Session Brandywine Valley Association
March 14, 2000 (Tuesday)	CCAS Meeting Topic: TBA 7:30 p.m. EST
March 31, 2000 (Friday)	Free Public Open House at Flower & Cook Observatory in Malvern, PA Topic: TBA 8:00 p.m. EST
March 31/April 1, 2000: (Friday)	CCAS Observing Session Brandywine Valley Association
April 8, 2000 (Saturday)	**National Astronomy Day**
April 11, 2000 (Tuesday)	CCAS Meeting Topic: TBA 7:30 p.m. EDT
April 28, 2000 (Friday)	Free Public Open House at Flower & Cook Observatory in Malvern, PA Topic: TBA 8:00 p.m. EDT
May 5/6, 2000: (Friday)	CCAS Observing Session Brandywine Valley Association
May 9, 2000 (Tuesday)	CCAS Meeting Topic: TBA 7:30 p.m. EDT
September 1-4, 2000 Labor Day Weekend	2nd Annual Black Forest Star Party Cherry Springs State Park, PA

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February Skies

Moon Phases

New Moon	02/05
First Quarter	02/12
Full Moon	02/19
Last Quarter	02/26

The Planets

Mercury makes an appearance in the evening sky in February. Best chance to see it is right around February 14, when it will be as far from the Sun as it will get on this apparition. That week there will be a "lineup" of four naked-eye planets in the evening sky: from horizon upward it will be Mercury, Mars, Jupiter, and Saturn.

Venus is in the morning sky this month, but is moving toward the Sun all month. By the end of February it will be getting difficult to see Venus before the sun rises.

Mars is low in the southwest after sunset. It's now very far away from us, so even a telescope won't improve much on the naked-eye view. All month long, however, it will be getting closer to Jupiter and Saturn. By the end of the month they will be close enough to present a pretty sight in the evening sky.

Jupiter is the brightest "star" in our evening skies this month, and very easy to find. Jupiter is always a grand sight in a telescope of any size!

Saturn is behind (east of) Jupiter, and will be a great sight in a telescope as the rings are now well-tipped toward us and thus "wide open." The positions of the Sun, Earth, and Saturn this month will give us an excellent view of the shadow of the planet falling across the rings, which really heightens the 3-D effect!

Uranus and Neptune are pretty much lost in the Sun's glare in February. They're in the morning sky, but hard to find.

Pluto is now rising about 3:00 a.m. EST, but it is extremely difficult to see Pluto. You need at least an 8" telescope (some people say a 10"), really dark skies, and lots of patience to find Pluto.

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ASTROCON 2000

Astrocon 2000 is the national convention of the Astronomical League, being held this year at the Holiday Inn Beach Resort in Ventura, California. The dates of the convention are July 19 through 22, 2000. This year's convention is being held together with the conventions of these organizations: Association of Lunar and Planetary Observers (ALPO), Astronomical Society of the Pacific (ASP), American Association of Variable Star Observers (AAVSO), International Occultation Timing Association (IOTA), American Association of Amateur Astronomers (AAAA), International Dark-Sky Association (IDA), Search for Extraterrestrial Intelligence Institute (SETI), and the Society of Amateur Radio Astronomers (SARA). Whew! Quite a list. Planned events include: Star-B-Que, tours to Griffith Observatory, Mt. Wilson Observatory, JPL Pasadena, up to 80 speakers and presentations, and a star party at Mt. Pinos. There will also be discounted tickets to Disneyland (the original), and to other area theme parks as well. Confirmed speakers include: Tony and Daphne Hallas (astro-photographers extraordinaire), Andre Borman (consultant to *Star Trek*), Dr. Tim Hunter, Don Mascholz, Ed Krupps, and Richard Berry.

Web page for more info: http://www.vcas.org/astrocon/

You can save money by registering before March 1, so if you're planning to attend, register now!

Finally, if anyone would like to present a paper at Astrocon, contact Paula Berinstein via e-mail at: pberinstein@worldnet.att.net

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Nebraska Star Party: July 29 - August 4, 2000

We have received brochures about the 7th Annual Nebraska Star Party, held at Merritt Reservoir, 27 miles south of Valentine, Nebraska. The site boasts great dark sky observing. If you would like to see one of the brochures, contact Jim Anderson at 610-380-4512.

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Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at $30.00 for one year. Send to:

International Dark-Sky Association
3545 N. Stewart
Tucson, AZ 85716

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their Website:
http://home.epix.net/~ghonis/index.htm

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Contributing to *Observations*

Contributions of articles relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an email message and send it to the editor at **jim.anderson@hboc.com**. Or mail the contribution, typed or handwritten, to:

Jim Anderson
19 Bluff Road
Thorndale, PA 19372-1104

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CCAS TO HOLD 3rd ANNUAL MESSIER MARATHON
SATURDAY/SUNDAY APRIL 1 / 2 , 2000

Well, it's that time of year again, and **CCAS Third Annual Messier** year really was confusing because of making this a Messier Marathon to shiny scopes and binoculars, I believe difficult to bag 50, 60, 70 or even veterans like **John Inburgia, Mike** lots of fun. And of course our own there with suggestions and donuts for April 1st and 2nd. We have found the Friday/Saturday because you need to "M" objects low in the western while. The sun sets at approximately 6:45 AM EDT Sunday, April 2, **hour**). Also, the waning crescent you know what that means. It's time to plan **The Marathon**, and the first of the new millenium. Last a scheduling snafu, but this year we are dedicated to remember. With many new members and several new it could be a real hoot! With a little luck, it is not more objects in one night's outing. Ask our Messier **Turco** or **Steve Limeburner**: these outings can be Astronomer Royal, Mr. Ed Lurcott, will no doubt be all. This year's primary weekend is Saturday/Sunday, Saturday/Sunday routine works out better than get to the BVA well before sunset to capture those horizon. Once you have those, you can relax for a 6:28 PM EST on Saturday, April 1, 2000 and rises at 2000. (**Don't forget to set your clocks ahead 1** moon doesn't rise until about 5:59 AM Sunday morning and will not be an issue during your observations this year. I'll have lots of material for you to pick up at the March meeting, and hopefully all of your Messier questions will be answered.

Many of you know all about Charles Messier and the 100 plus objects that bear his monogram. However, for those of you who are new to this hobby, here is a brief summary. It is a list of objects "discovered" or compiled by the French astronomer Charles Messier in the 1700's. Messier worked hard to discover comets, and he compiled this list so he could avoid mistaking the objects for comets.

What is a Messier Marathon? Fanatical observers love a challenge, and the Messier Marathon is quite popular today. Amateur astronomers challenge their abilities by finding all the Messier objects in one night. The Marathon is generally held during March, on the weekend that is closest to the equinox. During this night it is theoretically possible to see all of the objects on Charles Messier's list. One obvious problem with this is that the Moon may interfere with the night in question. It so happens that the Moon is in a favorable position once every three years. There is another night to see many of the Messier objects that is close to fall equinox, but a different object order must be used. It is imperative that your observing site have good horizons in all directions. If your horizon view is blocked to the East, for example, you will not find the early morning objects at the end of the list.

Dress properly!!! During the marathon most observers will need heavy, cold weather observing clothes. The most important item for keeping warm, which is often overlooked by those who do not observe in cold weather, is a hat. Much body heat is lost through the head, where blood vessels are close to the surface. Wearing a hat can keep your hands and feet from freezing! Layering is the secret to keeping warm. Wear long underwear under your pants, try using overalls such as are used for skiing or snowmobiling. Plan to set up before the sun goes down. Your observing site should be available before sunset. If you must set up all your equipment, try to arrive one hour before sunset. Have all charts & observing aids handy at the start. Make sure you have a place to sit during the night because your body will complain if you do not. Also have some hot liquids to drink (coffee is not really recommended because the caffeine in it tends to narrow the blood vessels, causing one to feel even colder) and something to eat will help you make it through the night.

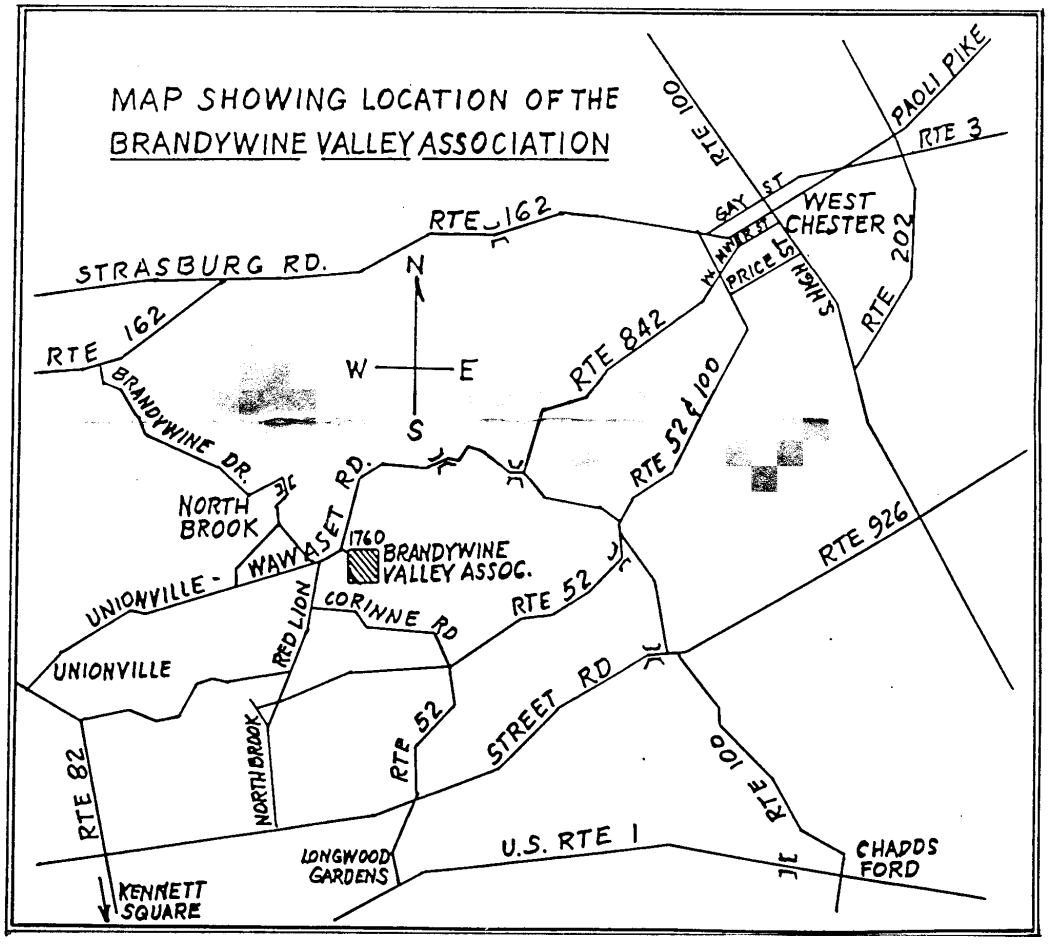
The Marathon begins as soon as it is possible to see the guide stars for the first objects. As darkness begins to prevail over twilight, the first objects must be hunted quickly. Do not linger over them, as they will be difficult to find and see at best. Once the first objects are located, you may then begin to work at a slower pace. The first part of the session will end in the Virgo cluster of galaxies. They will challenge even the hardiest of observers. After the Virgo cluster is complete, some time around 1 AM, you may then take the one nice long break of the night. You should start back on the search by 2:30 AM, in order to find all the objects left on the list. If you get hung up on any of the remaining objects, remember that they are rising. Don't waste time becoming stranded on one of these, continue with the next objects and come back to the one that tripped you up later. Practice makes Perfect This advice will help you through all aspects of the Messier Marathon. Unless you use a computer-controlled telescope, it is doubtful that you will succeed to see all 110 objects the first year you try it. **Remember, if you plan on applying these observations toward an Astronomical League award,**

computer control and digital setting circles are not allowed. However, last year we observed 79 objects using my 10 inch LX-200, and we sort of bent the rules. We would GOTO to a nearby guide star and then manually direct the scope to the M object.

Although an experienced observer can do the marathon on the first try, most of us will probably need more than one Marathon to make it happen. In addition, you can practice for the Marathon all year long! The Virgo cluster of galaxies is probably going to be the stumbling block for many observers. The galaxies are well placed for observing just before marathon time--if you can stay up after midnight to see them, practice for a few weeks ahead of time. If they trip you up on your marathon, spend the next weeks getting familiar with them. This way, when the Marathon comes around again, you will be ready for them! If you would like to finish the Marathon, but find yourself lost in the Virgo cluster, you should probably just poke around up there and resolve to spend some time learning to identify them. If you are blessed with setting circles and know how to use them, there's no reason why the cluster should defeat you. If possible, practice looking for those objects that appear first and last on the list of objects--M30, M72, M73, M74, M77, M76. These objects will be elusive and may not actually be visible from your site.

Frank J. Angelini

January, 2000



News from Neighboring Societies

[Editor's Note: All that is required to have notices published here is to include Jim Anderson on the mailing list of your society's newsletter.]

From *Focus*, the newsletter of the Delaware Astronomical Society:
Upcoming Meeting Topics and speakers:

February 15, 2000 (Tuesday) 8:00 p.m. EST	"Astronomy in Daylight" by Olaf Kirshner
March 21, 2000 (Tuesday) 8:00 p.m. EST	"What Makes Color?" by Bob Mentzer
April 18, 2000 (Tuesday) 8:00 p.m. EDT	"Cosmology's Embarassments" by Billie Westergard
May 16, 2000 (Tuesday)	Annual Dinner Meeting "The Art & Science of Early Star Atlases" by Ray Harris, President of Lehigh Valley Amateur Astronomy Society
June 20, 2000 (Tuesday) 8:00 p.m. EDT	"Variable Stars" by Dr. Judi Provencal, MCAO Resident Astronomer

DAS meetings are held at the Mount Cuba Observatory in Greenville, Delaware. For more info contact President Warren Jacobs (610-566-0510). Or check their Website at: http://www.physics.udel.edu/

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CCAS Lending Library

Contact our Librarian, Bill O'Hara, to make arrangements to borrow one of the books in the CCAS lending library. Copies of the catalog are available at CCAS meetings. Bill's phone number is 610-696-1422.

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CCAS Website

Pete LaFrance has set up a Web page for the Society on the World Wide Web (Internet). He has included some pictures taken by CCAS members. Check it out at: http://members.tripod.com/~ccas_2/ccas.html

Pete welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work; no copying copyrighted material! Give your contributions to Pete LaFrance (610-268-2616).

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AL Observing Programs

One of the benefits of joining the CCAS is that you also become a member of the Astronomical League, a national federation of astronomy clubs. The AL has a series of Observing Awards, and four observing clubs based on these awards have been started in the CCAS. These are the Messier Club, the Binocular Messier Club, the Lunar Club, and the Double Star Club. Each club has a volunteer coordinator:

Messier Clubs (both): Frank Angelini (610-873-7929)
Lunar Club: Ed Lurcott (610-436-0387)
Double Star Club: Jim Anderson (610-380-4512)

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CCAS Membership Information

The present membership rates are as follows:

REGULAR MEMBER.....$20/year
SENIOR MEMBER.....$10/year
STUDENT MEMBER..... $ 5/year
JUNIOR MEMBER.....$ 5/year
FAMILY MEMBER.....$ 30/year

Membership Renewals

Check the date printed on the address label of this issue of *Observations*; "exp." appears in front of it, just after your name. If you are due to renew, you may send your renewal check made out to our Treasurer, Pete LaFrance. Mail to:

Pete LaFrance
413 Church Rd.
Avondale, PA 19311-9785

Sky & Telescope Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of $29.95, which is much less than the newsstand price of $54.00, and also cheaper than individual subscriptions ($39.95)! Make out a check to the Chester County Astronomical Society, note that it's for *Sky & Telescope*, and mail to Pete LaFrance. Or you can bring it to the next Society meeting and give it to Pete there. Buying a subscription this way also gets you a 10% discount on other Sky Publishing merchandise.

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CCAS Officers

For further information on membership or society activities you may call:

President:	Mike Turco	(610) 399-3423
Vice Pres:	Steve Limeburner	(610) 353-3986
Treasurer:	Pete LaFrance	(610) 268-2616
Secretary:	Doug Liberati	(610) 827-2149
ALCor and Newsletter:	Jim Anderson	(610) 380-4512
Librarian:	William O'Hara	(610) 696-1422
Observing:	Ed Lurcott	(610) 436-0387

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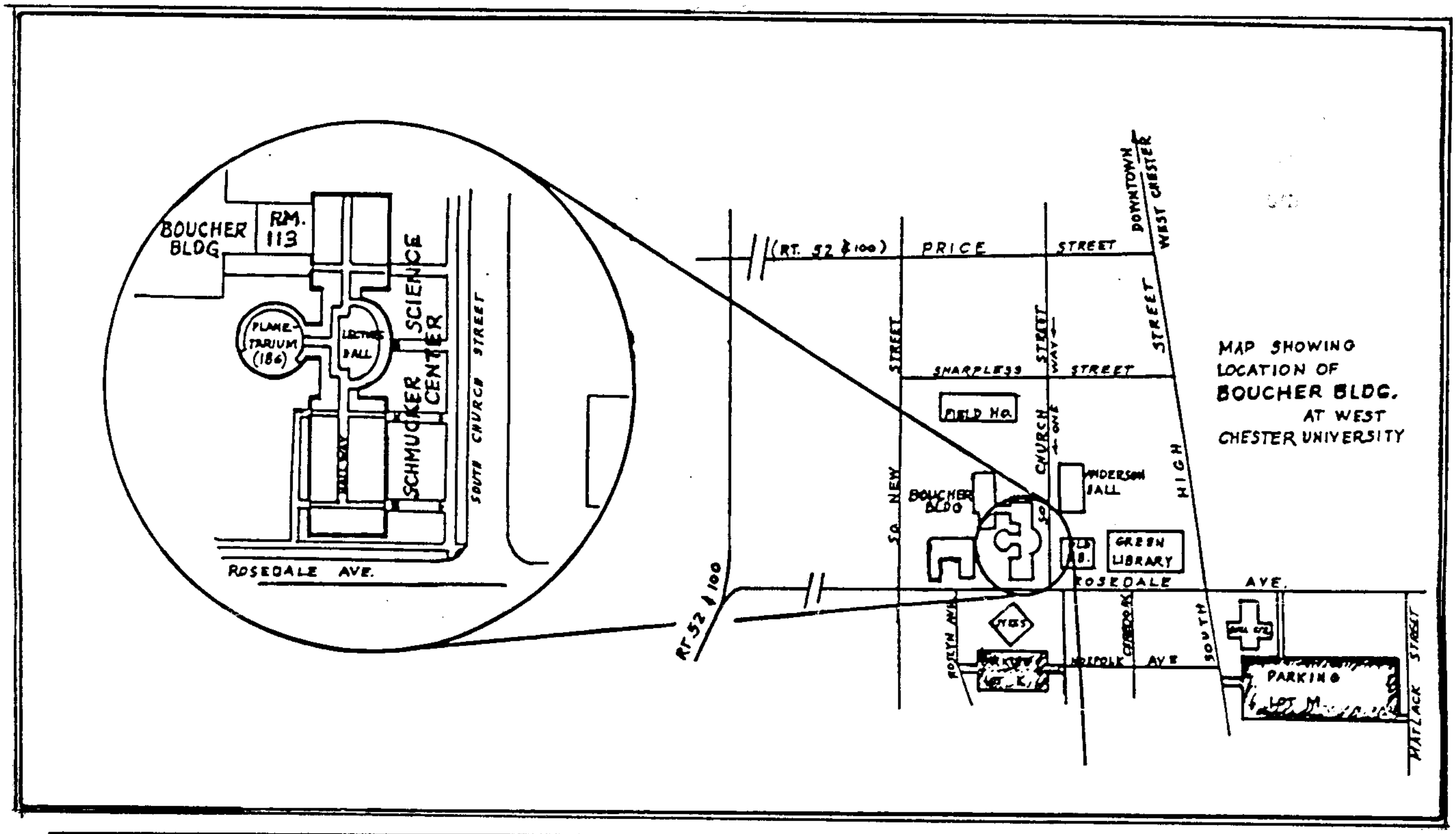
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LECTURE HALL
SCIENCE CENTER
SCHMUCKER
SOUTH CHURCH STREET
ROSEDALE AVE.
(RT. 52 & 100) PRICE STREET
DOWNTOWN WEST CHESTER
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BOUCHER BLDG.
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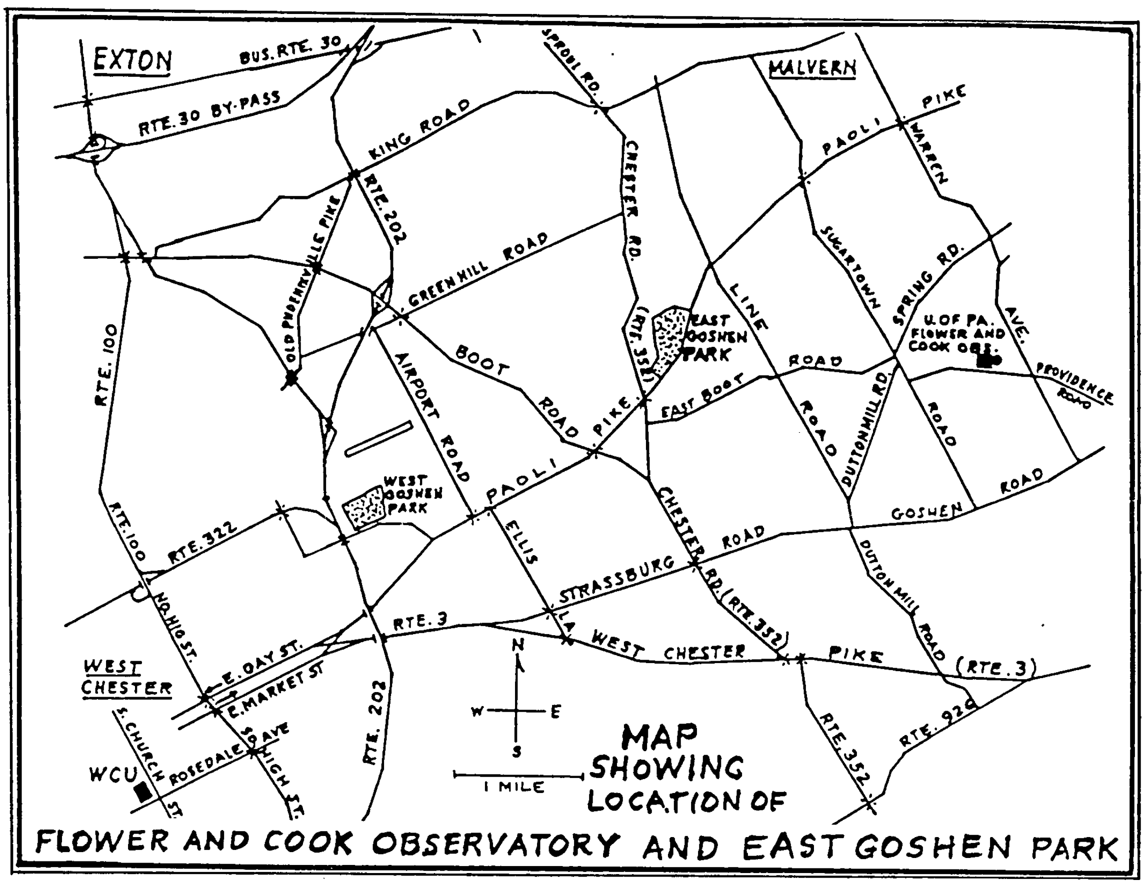
CHESTER UNIVERSITY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KING ROAD
RTE. 202
OLD PHOENIXVILLE PIKE
GREENHILL ROAD
SPROUL RD.
CHESTER RD.
(RTE. 352)
MALVERN
PAOLI PIKE
WARREN
SUGARTOWN
SPRING RD.
AVE.
U. OF PA. FLOWER AND COOK OBS.
PROVIDENCE ROAD
EAST GOSHEN PARK
LINE ROAD
ROAD
EAST BOOT
BOOT ROAD
PIKE
DUTTON MILL RD.
ROAD
AIRPORT ROAD
RTE. 100
WEST GOSHEN PARK
PAOLI
ELLIS
CHESTER RD. (RTE. 352)
ROAD
GOSHEN ROAD
RTE. 100
RTE. 322
NO. HIGH ST.
STRASSBURG
LA
RTE. 3
WEST CHESTER PIKE
(RTE. 3)
DUTTON MILL ROAD
WEST CHESTER
E. GAY ST.
E. MARKET ST
N
W
E
S
1 MILE
RTE. 202
RTE. 352
RTE. 926
S. CHURCH ST.
ROSEDALE
SO. AVE
HIGH ST.
WCU
MAP
SHOWING
LOCATION OF
FLOWER AND COOK OBSERVATORY AND EAST GOSHEN PARK