Observations
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

JUNE 2003
(VOLUME 11, NO. 6)

CCAS Summer Schedule

June	July	August
Friday June 27: Observing Session/Meeting Brandywine Valley Assoc. begins around sunset	Friday July 25: Observing Session/Meeting Brandywine Valley Assoc. begins around sunset	Friday Aug. 22:Observing Session/Meeting Brandywine Valley Assoc. begins around sunset
Saturday June 28: cloud date	Saturday July 26: cloud date	Saturday August 23: cloud date

New CCAS Logo and *Observations* Masthead

Our Public Relations Chair Vic Carlucci (who is also a professional graphics designer) has redrawn the Society's logo in color, and included it in a masthead he created for our monthly newsletter. The members present at the May meeting approved the use of this logo and masthead. We thank Vic for his fine efforts in "sprucing up" our image!

The logo of the Chester County Astronomical Society was designed by founder Ed Lurcott, and selected for use by the members in November 1994 (from a total of 4 candidate logos). It has the outline of Chester County superimposed on a circular background with the Society's name around the edge of the circle. Over the county outline are representations of a human eye looking through a lens at a distant star, representing our members, astronomical equipment, and the science of astronomy, respectively. The crosshairs, much like the crosshairs in a traditional finderscope, are centered on the geographical center of the county at 40° 00' North latitude and 75° 45' West longitude. Also included is the Mason-Dixon Line that marks the southern boundary of Chester County (and Pennsylvania, of course) at 39° 43' 17.6" North latitude, which astronomers/surveyors Charles Mason and Jeremiah Dixon established from stellar measurements starting at Star Gazers Rock in southern Chester County (near Embreeville).

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Election Results

At the May meeting, the Election Committee counted the ballots, and John Imburgia then announced the results. Mike Turco was re-elected as President, Steve Limeburner was re-elected Vice President, Caitlin Grey is our new Secretary, and Bob Popovich is our new Treasurer.

We would like to take this opportunity to thank the outgoing officers for their service to the Society. Doug Liberati served us as Secretary from 1999 through 2003, and Pete LaFrance has served us long and well as Treasurer since 1995! Great job, guys, and many many thanks from all the members!

Also, we extend a big thank you to the members of the Election Committee, John Imburgia (Chair), Bill O'Hara, and Kathy Buczynski.

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Awards Earned

I apologize for not reporting on these awards sooner; most of you probably spotted them in the Astronomical League's newsletter *The Reflector* (March 2003 issue).

Elise Furman earned her Regular Messier award for finding and logging 70 of the 110 Messier objects. Congratulations, Elise! Elise now holds both the Binocular Messier award (for finding the objects with binoculars) and the Messier award (for finding them with a telescope).

Jim Anderson earned the Honorary Messier award and pin, for finding and logging all 110 of the Messier objects with a telescope. Good job!

And rumor has it that an as-yet-unnamed CCAS observing legend has finished the Herschel 400 list. Wow! The name of the awardee will have to await the review of the logbook, but I'm sure that news will follow soon!

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Weather and the Stars

Has anyone seen any stars lately??? Woe is us. This must be the worst spring for stargazing around here in years. Keep praying, it **has** to get better…

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Donna Recupito won the door prize at the CCAS "Beginning Astronomy" class. Here we see Donna receiving the prize, a copy of the book *Nightwatch*, by Terence Dickinson, from Education Committee Chair Kathy Buczynski and CCAS President Mike Turco. The drawing was held at the final class session on May 20. Many thanks to the members of the Education Committee who donated so much of their time to share their love and knowledge of astronomy with others! (photo by Ed Lurcott)

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June Skies

Moon Phases

First Quarter	6/7	
Full Moon	6/14	"Full Strawberry Moon"
Last Quarter	6/21	
New Moon	6/29	

The Native American name for this month's Full Moon was obtained from the *Farmer's Almanac* Website. All the Algonquin tribes used this name. In Europe, it was also called the Rose Moon.

The Planets

Mercury appears low in the morning sky near Venus before sunrise, all month.

Venus remains in the morning sky this month, but is now very low in the east at morning twilight.

Mars is rising as early as midnight by the end of June. It is high in the south at dawn. **In August Mars will be at its closest to us in recorded human history! Only 55,758,006 km, or 34,646,418 miles!** This month Mars is close enough that you should be able to see surface markings in a telescope. The south pole is tilted toward us, so the bright ice cap you see is the South Polar cap.

Jupiter is the brightest "star" in our evening skies, blazing away in the west. Seeing Jupiter in a telescope is always an impressive experience!

Saturn is still in the western sky as soon as night falls in early June, but is very close to the horizon. By mid-month Saturn will disappear in the Sun's glare.

Uranus is in the morning sky in May, in Capricornus. Mars will be just 3° south of Uranus on June 20, so that may help you find the fainter Uranus.

Neptune is also in the morning sky this month, in Capricornus.

Pluto is high in the southeast in the evening, in Ophiuchus. It reaches opposition on June 9. You need good dark skies, at least an 8" telescope, good star charts, and lots of patience to find Pluto.

Summer Solstice: June 21

Summer officially starts at 3:10 p.m. EDT on June 21. The Sun reaches the farthest point north in its annual apparent path in our sky, and starts moving south again.

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Calendar Notes

September 9, 2003 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
October 14, 2003 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EDT
November 11, 2003 (Tuesday)	CCAS Meeting Location: West Chester University 7:30 p.m. EST
December 9, 2003 (Tuesday)	CCAS Meeting Location: **TBD** 7:30 p.m. EST

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Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Bob Popovich
416 Fairfax Drive
Exton, PA 19341-1814

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Newsletter Deadlines

These are the deadlines for submitting material for publication in the newsletter, through the September 2003 issue.

Issue	Deadline
July 2003	06/27/2003
August 2003	07/25/2003
September 2003	08/29/2003

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The Martians are coming!

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To telescopes!

Astronomus

A Journal for Younger Astronomers

By Bob Popovich

"Finding my way in the dark"

When I say "Finding our way in the dark," it's not about a game of "capture the flag," but rather about the desire to find one's way 'bout the night sky. The need to gain some sort of understanding and connection, some sense of order. Is there any doubt that just such a desire has been on the minds of human beings since time immemorial? Even more, can we doubt that it is almost an instinctive desire?

Long before the art of science evolved as a true discipline, people have been recording their observations of the night sky in order to gain just such an understanding. Now certainly people of long ago may not have had any deliberate plan in mind, but they were certainly compelled to observe and record.

And can you imagine what our ancestors were able to observe in the days before light and air pollution? A sky chock-full of stars, a magnificent Milky Way spanning the heavens, the zodiacal light, M31 and the Beehive…without a telescope! It must have been downright confusing!

So, it seems quite natural that they would have "connected the dots" to form figures—both real and imagined. And following that, equally natural that the creative power of our ancestors drove them to form a *personal* connection with the patterns of the night sky. How? By creating wonderful stories, attaching them to these celestial figures and spinning them together into the rich tapestry we enjoy today.

But, they must have pined, we *so* want others to know the origin and order of the heavens, we *must* record our observations. Through their desires to tell a story and bring order, they created things of beauty and laid the foundation for science. Both have endured across the ages.

Fragments of these observations, even from ages far before the Greeks and Persians, survive to this day through carvings in stone and simple pictures made with natural pigments. It shows us that they learned to recognize the objects of the heavens and did, in fact, understand that there was an order to them. These patterns and cycles were familiar. This in hand, people could move on from merely noticing, to trying to understand. Even today, though our knowledge base in infinitely greater (and our seeing infinitely worse!) and though we use telescopes and CCD cameras, the principle is unchanged. To understand and to bring order. To find our way in the dark.

I suppose we could also imagine that our distant ancestors wanted to find their way in the dark a means of dispelling fear. Since much goes on at night that can't be seen, people tend to be uncomfortable at night. But this is a problem at ground level. The night sky is full of things that *can be seen*. By becoming familiar with the firmament, appreciation waxes as fear wanes. While we're on the topic of fear, do you think that a well-educated person of the 21st century, living in a half-million dollar Chester County home is any more comfortable with the night than were our distant ancestors? Not if you consider the excessive, wasted light that *intrudes* on the desire to find our way in the dark. Clearly, there are a lot of folks out there who need our help finding their way in the dark!

How long ago did people begin finding their way in the dark? Well, it could be as long ago as 32,000 years. The carving shown below was made on a piece of mammoth tusk less than 2 inches long. It shows a figure with a narrow waist, upraised arms and a left leg rendered shorter than the right leg. It suggests (allowing for proper motion) the constellation we know today as Orion.

The famous paintings in the caves at Lascaux, France, include what appear to be 15,000 year-old efforts at finding one's way in the dark. Notice the pattern of six black circles above the painting of the bull. What do you think, are we looking at Taurus and the Pleiades?

And also at Lascaux:

Notice the empty square and the black circles that follow. Could it be a depiction of the lunar cycle from new (the empty square) to full?

This may be a bit “Chariot of the Gods-ish”, but it’s also intriguing. And it’s fun. Finding our way in the dark. How exciting to be part of such a long and glorious tradition!

Next Time: Variation on A Theme

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NASA's Space Place

Eggs in the Air

By Patrick L. Barry

The sky will be filled with flying eggs on May 10, 2003, when a thousand students converge on The Plains, Virginia, for the first-ever national high school rocketry competition.

Called the Team America Rocketry Challenge (http://www.rocketcontest.org), the competition sets the goal of flying a custom-built, two-stage rocket carrying two raw eggs to a height of exactly 1,500 feet, and then returning the eggs to the ground unbroken. The team that comes closest to 1,500 feet without breaking their eggs will win the national title.

The Aerospace Industries Association and the National Association of Rocketry (NAR) are organizing the competition. NASA administrator Sean O'Keefe will attend the final event.

"The idea is to get kids interested in the world of aerospace," says Trip Barber, director of the competition and vice-president of the NAR. "And they will learn some important lessons about the power of math and science-and cooperation and teamwork-along the way."

To develop their designs, the students first used computer simulator software provided by NAR. Then they had to apply old-fashioned ingenuity and craftsmanship to bring the design to life and flight-testing to refine it.

Students constructed rocket bodies using a combination of hobby-store rocket kit parts and custom materials. A typical rocket might consist of cardboard tubes from paper-towel or wrapping-paper rolls, a pre-made nose cone, rocket-kit body segments cut to size, and light-weight, balsa wood fins. But the greatest challenge for many was designing the compartment for the eggs.

Some used plastic Easter eggs as casings, padding the inside with bubble wrap, foam peanuts, or even gelatin. Others decided not to "reinvent the wheel," making a cradle from the egg-crate material used for shipping eggs. Some chose to make larger, more powerful rockets big enough to carry the eggs inside, while others made smaller, more efficient rockets that have a bulging egg compartment mounted on top.

A hundred unique designs will be put to the test in Virginia. Only one will win. But for the students, the real prize has already been won: Learning an approach to problem-solving that works, whether you're launching eggs over a field or sending astronauts to Mars.

A Boeing Delta II rocket launched the New Millennium Program Deep Space 1 spacecraft on October 24, 1998.

In the end, it's all about the future: Future technologies and the kids who will grow up to create them. Many advanced technologies are being developed now by NASA's New Millennium Program (http://nmp.nasa.gov). Who will do that work in the future? Perhaps some kids who spent their weekends launching eggs into the air.

Are you a kid? Would you like to build your own rocket? Visit NASA's Space Place and learn how to make a bubble-powered rocket! (http://spaceplace.jpl.nasa.gov/rocket.htm.) It won't take you to Mars, but it's a good way to get started.

The preceding article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

The *Space Place* now offers a three-minute answer to a space-related question on a toll-free phone line. Dr. Marc Rayman, Deep Space 1 Manager (and an amateur astronomer himself), answers a question about space or space exploration. Call (866) 575-6178 to hear the monthly message.

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"No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's and yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinised and studied, perhaps almost as narrowly as a man with a microscope might scrutinise the transient creatures that swarm and multiply in a drop of water. With infinite complacency men went to and fro over this globe about their little affairs, serene in their assurance of their empire over matter. It is possible that the infusoria under the microscope do the same. No one gave a thought to the older worlds of space as sources of human danger, or thought of them only to dismiss the idea of life upon them as impossible or improbable. It is curious to recall some of the mental habits of those departed days. At most terrestrial men fancied there might be other men upon Mars, perhaps inferior to themselves and ready to welcome a missionary enterprise.

"Yet across the gulf of space, minds that are to our minds as ours are to those of the beasts that perish, intellects vast and cool and unsympathetic, regarded this earth with envious eyes, and slowly and surely drew their plans against us. And early in the twentieth century came the great disillusionment."

The beginning of H.G. Wells' classic *The War of the Worlds*, written in 1898.

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Observing Opportunities: June 2003

By Ed Lurcott

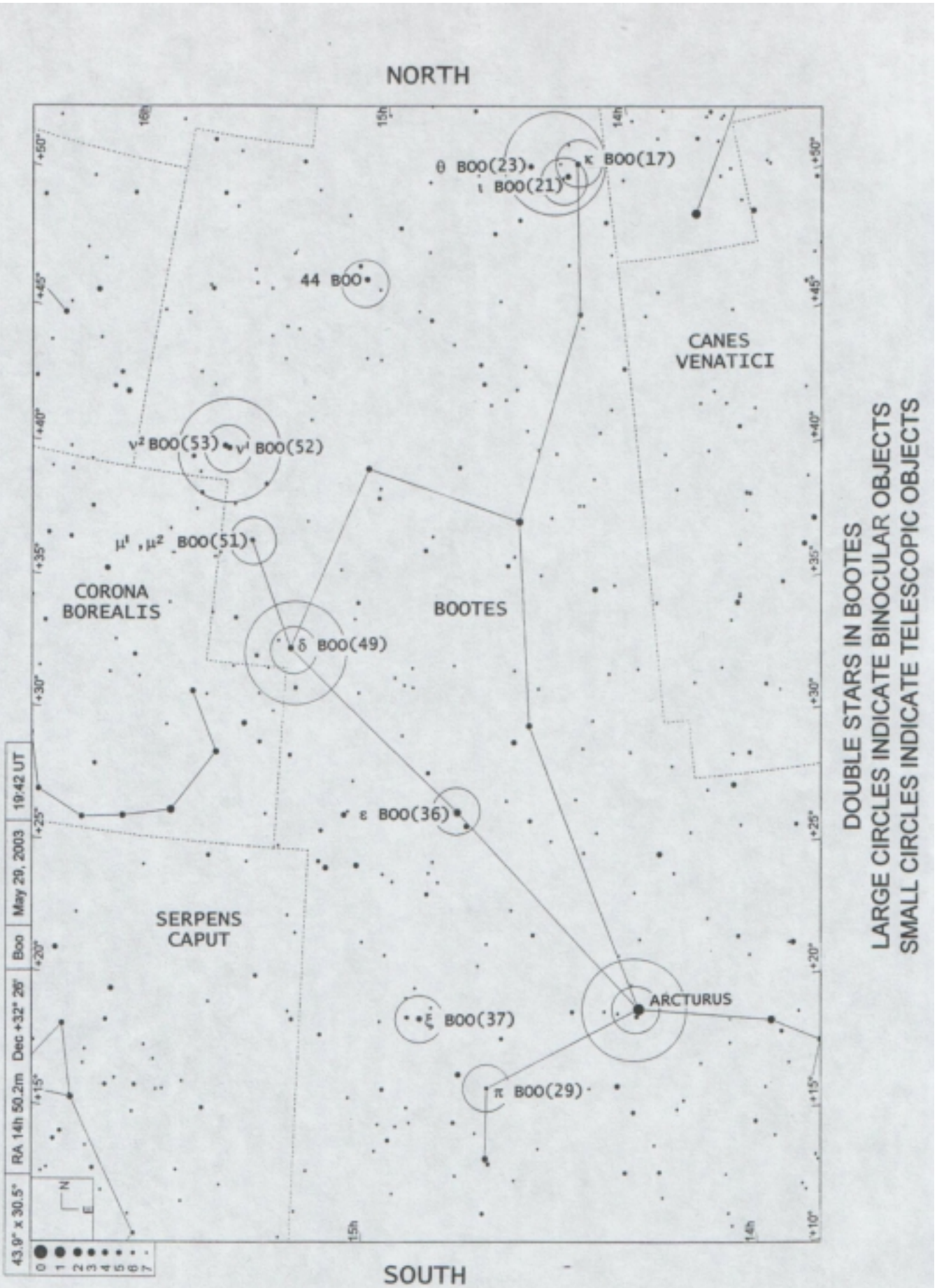
In the middle of June the constellation Bootes (the Herdsman) is approaching the meridian at about 9:00 p.m. local time. When looking at Bootes one is looking perpendicular to the plane of the Milky Way. Hence there are very few bright deep-sky objects in this direction. There are no Messier objects, and only one globular cluster. All galaxies in Bootes are fainter than 10th magnitude.

It appears that the Herdsman must have been gathering double stars, for there is a herd of them in Bootes. I have listed ten of them for your viewing pleasure. Remember to follow the arc of the Big Dipper's handle to find bright Arcturus.

1. Start by using binoculars on Arcturus, a first magnitude yellow-orange star 37 light years away. It has a sixth magnitude companion about 18 minutes of arc to the south-southeast. This fainter star is not really associated with Arcturus. But Arcturus is moving 2.2 arc-seconds per year toward the "companion." They will appear to be only a couple of arc-minutes apart some 475 years from now.
2. Telescope users can now move about seven degrees east-southeast to the fourth magnitude star π Bootis (29). This pair of stars has magnitudes of 4.9 and 5.8, and they are separated by 5.6 arc-seconds. Some observers report them as being blue-white and pale orange in color, a pleasing close double star.
3. Next move four degrees to the northeast and find ξ Bootis (37). It is a magnitude 4.5 star with a magnitude 7.0 companion 6.0 arc-seconds away. This binary has a period of 150 years. I noted the colors as "off-white and dark gold, very pretty" back in July 2000.
4. Next move to ε Bootis (36), the magnitude 2.5 star halfway up the east side of the "Kite." The brighter star has a magnitude 4.9 companion only 2.9 arc-seconds away. It is a challenge to separate these two stars due to the difference in magnitude. Refractors of four inches or more should be able to detect the companion, or secondary, star. I would be interested to hear from members who were successful in separating them.
5. Moving up the east side of the Kite, find δ Bootis (49) some eight degrees northeast of ε Bootis. Delta is a wide pair of stars with magnitudes of 3.5 and 7.4, separated by 105 arc-seconds. Stabilized binoculars might be able to split this pair.
6. Four degrees north-northeast of Delta find a pair of stars called μ^1 and μ^2 (Mu^1 and Mu^2) Bootis. Mu^1 is a magnitude 4.3 star, and Mu^2, 108 arc-seconds away, is actually itself a close double. Mu^2 consists of a magnitude 7.0 star and a magnitude 7.6 star only 2.3 arc-seconds apart.
7. About 3.5 degrees north-northeast of Mu^1 and Mu^2 is another wide pair of stars, ν^1 and ν^2 Bootis (Nu^1 and Nu^2, or 53 and 52). Both are fifth magnitude stars, separated by ten arc-seconds. This should be an easy pair for binocular users.
8. Almost eight degrees northwest of Nu^1 and Nu^2 find a fifth magnitude star, 44 Bootis. It is a binary pair of stars, magnitudes 5.3 and 6.2, revolving around each other with an orbital period of 220 years. Now 2.3 arc-seconds apart, you will need a steady `scope of four inches or more to see them both.
9. Some eight degrees northwest of 44 Bootis there are three stars: θ, ι, and κ Bootis. All three of these are double stars, but the companion of θ is only magnitude 11.1 and thus very difficult to see. The other two are easy in any telescope. Look at ι (Iota) first. Iota is made up of a magnitude 4.9 primary star and a magnitude 7.5 secondary star at a separation of 38.5 arc-seconds.
10. κ (Kappa) Bootis consists of a magnitude 4.6 primary star and a magnitude 6.6 secondary star 13 arc-seconds away. There are several other lesser stars nearby which makes this an attractive sight in binoculars. By the time you get to this last group of stars, you will be looking just about straight up at the zenith.

I would be interested in learning how many CCAS members were able to round up this herd of doubles in Bootes.

[Ed has included a map of Bootes on page 6.]


NORTH
θ BOO(23)
κ BOO(17)
ι BOO(21)
44 BOO
CANES VENATICI
ν² BOO(53)
ν¹ BOO(52)
μ¹ ,μ² BOO(51)
CORONA BOREALIS
BOOTES
δ BOO(49)
ε BOO(36)
SERPENS CAPUT
ARCTURUS
ξ BOO(37)
π BOO(29)
SOUTH
43.9° x 30.5°
RA 14h 50.2m Dec +32° 26'
Boo
May 29, 2003
19:42 UT
DOUBLE STARS IN BOOTES
LARGE CIRCLES INDICATE BINOCULAR OBJECTS
SMALL CIRCLES INDICATE TELESCOPIC OBJECTS

Cartoon by Nicholas La Para

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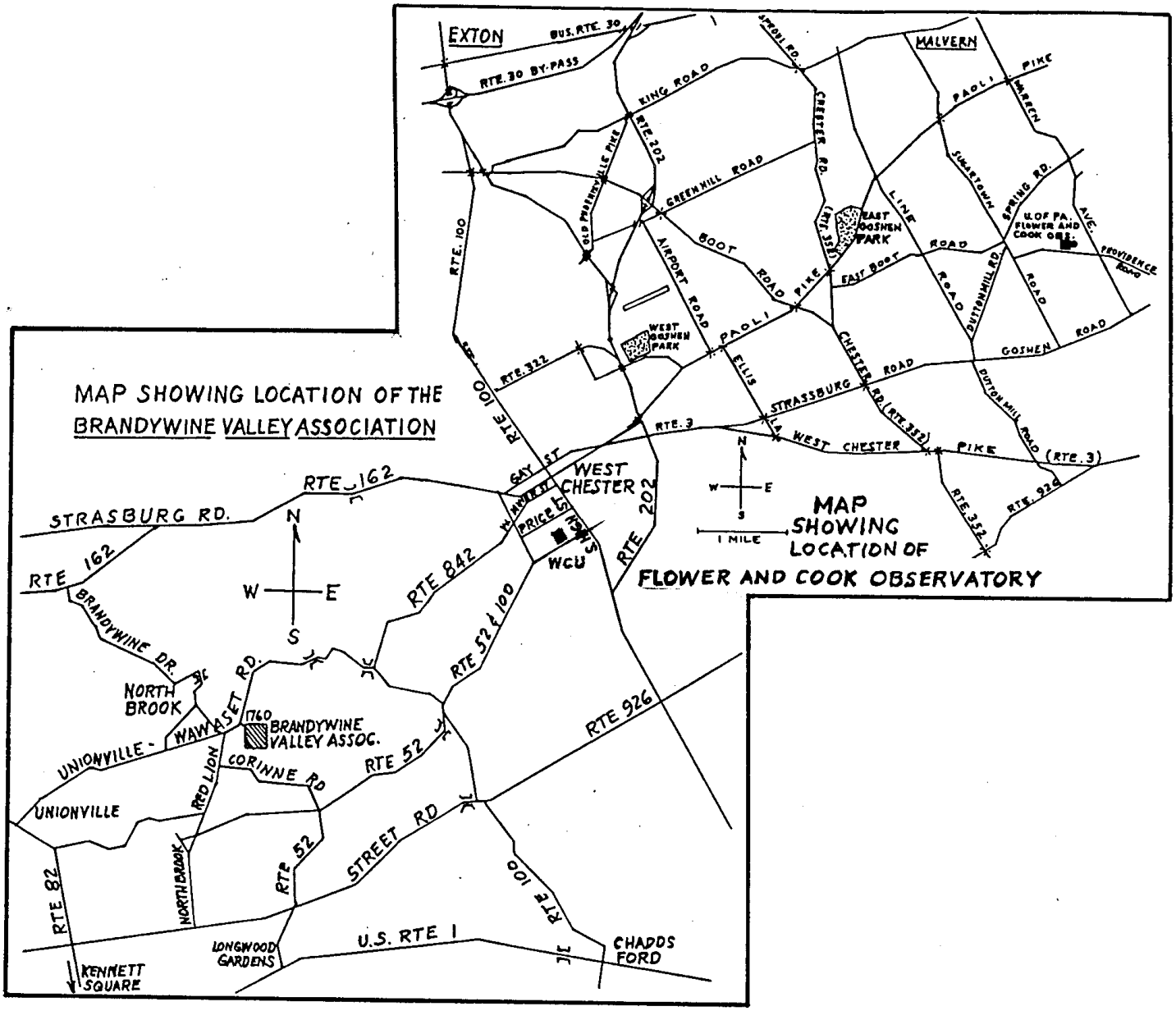
"**Martians build two immense canals in two years**"

New York Times headline on Aug. 27, 1911, after an astronomer reported seeing two previously unnoticed lines on the surface of Mars. The breathless story went on to describe a vast engineering feat accomplished in an "incredibly short time."

Obviously, inaccurate reporting is not such a recent phenomenon at the *Times*…

In 1911 Mars passed within 77,555,000 km, or 48,081,000 miles, of Earth.



To get to the Myrick Conservation Center of the Brandywine Valley Association from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles.

To get to the observing site at the BVA property, 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 (so you don't ruin other observers' night vision).