

The ASTERISM

Volume XVII No.8

May 2006

Sins

by Bonnie B. Witzgall

A member of the Westchester Amateur Astronomers related the following true story to me during the 2005 Northeast Astronomy Forum.

The Westchester Amateur Astronomers (WAA) conducted a daytime Sidewalk Solar Show in one of the local parks. Among the interested visitors was a young boy accompanied by his Dad. After listening to the basic description about the Sun, the boy was still skeptical about the precautions of viewing the intense star through a telescope. The WAA member on duty explained that the boy's fear was justified, but the solar filter in use was perfectly safe. Other people viewing through the scope were awed by the great solar flares revealed in H-alpha. Yet, the boy still worried about putting his bare eye to the eyepiece. His father then said something like, "Hey, whatzamatatta? You chicken or sumthin? The astronomer guy here says it's safe to look. I ain't scared." The man turned his head and placed his right eye to the telescope's lens. A moment later, a blood-boiling scream blasted from man's lips. He wrenched his tortured face away from the scope and slammed his hand over his right eye. He then staggered back from the telescope, all the while making sure to keep his 'good' left eye focused on both his son and the startled crowd. Everyone around the scope was shocked! The astronomer said it was safe! There could not possibly be any retina damage...could there? An eternity of silent seconds passed as all witnesses just stared and held their collective breath. As soon as the father felt he made his point, his frightened face switched to a smug smile with a "Ha! Ha! Just kidding!" and fanatical laughter as his closing remark. The wise-ass father's eye was fine, but the damage was done to everyone else. The group who wit-

nessed the hoax either expressed relief that no one was blinded or they just laughed at the stunned astronomer. The WAA member, tricked for scarcely a moment, was now incensed by this man's poignant stupidity and his ignorance for scientific knowledge. The young boy, who was sincerely frightened by his father's act, now avoided all telescopes. No amount of coaxing could get him to neither listen to the astronomer nor view the Sun. The boy and his overbearing dad walked away from the astronomical event, leaving everyone behind to cope with their cruel wreckage.

These brutal lessons, taught in a split second by ignorant people can go deeper than any astronomer can breach. Somehow, astronomers and teachers of science are always under fire, constantly defending the flame of knowledge. Please remember this ruthless story if you participate in any Astronomy Day festivities. Ω



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Monthly Meeting
Friday, May 19th
at 8:00 PM

in the

Roy Smith Theater

This is the MEMBERS Presentation

Presentations by

Wayne Augustine

March Solar Eclipse

Al Witzgall

Special Presentation

Clif Ashcraft

Astro Photography



Membership Dues

Regular Membership: \$21
Sustaining Membership: \$31
Sponsoring Membership: \$46
Family Membership: \$5

Sky & Telescope subscription:
\$32.95

Astronomy subscription:
\$34.00 (note the change!)

First Time Application Fee: \$3

Dues can be paid to the Club
Treasurer or Membership
Chairperson at the Observatory



The  ASTERISM

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THEATER IN THE SKY

by Ron Ruemmler

May 2006 welcomes Jupiter back into the evening sky. The Giant Planet rises as the sun sets and is easily visible all night. Use binoculars to look for the four Galilean moons as well as Zubenelgenubi, the double star just below the planet. The second largest planet, Saturn, still offers good views of its rings, although it now sets soon after midnight. Look for the Beehive star cluster just to the left of the planet.

Mars is becoming harder to find as it approaches its dimmest of the year. Fortunately, it is positioned near Pollux and Castor, the Gemini Twins. As the month begins, the Red Planet is directly below the two stars, while at the end of May it is off to their left. A particularly wonderful alignment occurs on the 30th when Mars, the Moon, Pollux and Castor form a nearly perfect, evenly spaced, horizontal line low in the west just after sunset.

Spica, the alpha star in Virgo, the Virgin, is hiding behind the nearly-full Moon as the sun sets on the 10th. It might be possible to glimpse the star to the upper right of the bright edge of the Moon as the sky darkens.

Mercury is visible during the last week of the month low in the west just after sunset. Venus blazes all by itself in the morning sky, rising just as the sky begins to brighten.

Finally, we get a rare opportunity to see a very young crescent moon on the same day of its New phase. Both the latitude and longitude have to be correct for this to happen as well as the Moon being far north of the plane of the earth's orbit. Everything comes together for New Jersey on the evening of the 27th. Although this event becomes theoretically possible in western Europe, it will be so difficult there that someone in New Jersey might be the very first person on Earth to see the Moon during this lunation! Note that this is not just a technicality caused by Daylight Saving time, since New Moon occurs a full 87 minutes after midnight. Ω

MAY SKY CALENDAR

3 WED 11:00 PM Saturn left of fat crescent Moon
4 THU 10:00 AM Jupiter at opposition from the sun, becoming an evening object
5 FRI 1:13 AM First Quarter Moon
6 SAT ASTRONOMY DAY! Many observatories open to the public
10 WED 7:00 PM Daytime Lunar occultation of Spica
10 WED 8:30 PM Spica upper right of Moon
11 THU 9:00 PM Jupiter left of Moon
12 FRI 9:00 PM Jupiter above Moon
13 SAT 2:52 AM Full Moon

18 THU 4:00 PM Mercury at conjunction beyond Sun, enters evening sky
20 SAT 5:20 AM Last Quarter Moon
27 SAT 1:27 AM New Moon
27 SAT 8:17 PM Sunset
27 SAT 8:55 PM Extremely thin crescent Moon directly above sunset point
27 SAT 9:24 PM Moonset
28 SUN 8:50 PM Mercury below very thin crescent Moon
30 TUE 9:00 PM Mars-Moon-Pollux-Castor lineup
31 WED 10:00 PM Saturn below crescent Moon

A NEW LOOK AT THE EARLY UNIVERSE

by Lew Thomas

Launched in 2001, data from the Wilkinson Microwave Anisotropy Probe (WMAP) has recently been analyzed after two years of concentrated effort. It shows the polarization of early photons, now stretched to microwave wavelengths. Such polarization is believed to be caused by fast-moving protons released from the earliest star formation. It places the first star beginnings at about 400 million years after the Big Bang. This is earlier than previously expected.

Analyzing fluctuations or waves in the microwave background, whose average temperature is 2.7⁰ Kelvin, scientists place the age of our universe at 13.7 billion years. The spacing of these ripples or temperature variations, orders of magnitude less than the average microwave temperature, gives credence to the inflationary hypothesis. This states that in the first 10⁻³⁵ of a second after the Big Bang the universe expanded to billions of light years in extent. The thought is that this expansion took place due to some strange anti-gravity force which repelled rather than attracted. This expansion and the slower expansion which took place after star formation rendered the universe, at least where we are, flat and not curved outward in a positive sense like a sphere or inward like a western saddle.

Now the universe is still expanding in an accelerating sense due to some force or dark energy which is believed to be constant over all time. If this be the case, as the universe expands the attractive force of gravity diminishes and acceleration must result.

But what is this anti-gravity force which caused the initial inflation? In our AAI Seminar Group, Bill Poelstra suggested that we (the universe) are moving forward in time at light speed; that is, all positive matter does this.

But within a small semiconductor diode or transistor, negative mass can be created in very small amounts. If this be true, the negative mass must move in the opposite direction along the time line and leave our presence. He is building an experiment that may detect this exit by the loss of mass within the semiconductor as measured by its change in electrical charge. If this hypothesis proves true let me advance another.

Suppose just after the Big Bang a large amount of negative mass was created. Being negative it would initially exert a repelling force on all matter. But being negative it would leave our universe rapidly moving "backward" along the time line. Could this be the negative gravity cosmologists speak of? Remember this is only a hypothesis (but so is anti-gravity).

Ω



• Dome Duty Schedule

May. 5	Team B
May.12	Team C
May.19	Team D
May.26	Team E
Jun.2	Team A
Jun.9	Team B
Jun.16	Team C
Jun.23	Team D
Jun.30	Team E
July.7	Team A
July.14	Team B
July.21	Team C
July.28	Team D
Aug.4	Team E
Aug.11	Team A
Aug.18	Team B
Aug.25	Team C
Sept.1	Team D



Stewart's Skybox

by Stewart Meyers

Since May is when we have the annual members' meeting where people from the club do presentations on some topic, I had thought to honor the tradition by having you, the readers, select the topic for this issue's column. While the response was very lackluster in terms of numbers (only three people came forward with ideas), the quality of the suggestions was rather good. Clif Ashcraft suggested a piece on cosmic jets and how they are found in a wide variety of places in the universe. Then, Stephen Krisocki thought that it might be interesting to discuss inflation in the early universe, especially since the WMAP mission found evidence confirming this phenomenon. And we had Alex Flynn come up with the idea of discussing remote-controlled telescopes. Choosing the winner was very tough since all entries were quite good. But, after watching (or attempting to watch) coverage of the March 29th solar eclipse, I was able to select a winner. It is Alex Flynn and his remote-controlled telescope suggestion. If you were rooting for one of the other topics, don't worry. They might crop up in future columns.

Professional Beginnings

While Alex was mainly interested in the amateur astronomy angle of this topic, I hope he won't mind if I expanded the scope a bit to cover automated/remote astronomy in general.

For most of the history of telescopic astronomy, the astronomer had to actually be at the telescope, looking through it. Sometimes, they may have had an assistant to write down notes dictated while the astronomer was observing, such as what Caroline Herschel did for her brother William or how the Bonner Durchmusterung (BD) star catalogue was compiled in the 19th century.

Photography came along late in the 19th century. While it removed the astronomer from the main eyepiece, they still had to guide the telescope to make sure it tracked correctly during

the long exposures needed. Eventually, as telescopes grew larger and more complicated, the guiding and aiming tasks were assigned to night assistants and technicians.

The next innovation was replacing film cameras with electronic ones. This moved the astronomer further from the telescope, usually to a control room where they could watch the information coming in from the camera on a screen. But telescope control was still pretty much in the hands of technicians.

But there were several factors that were coming together that would set the stage for remotely operated telescopes. Computers were rapidly improving in the late 1970's and were able to do more complex tasks. In the 1980's, electronic imaging equipment was improving as well. Also, new observatories were opening up in high-altitude locations like Mauna Kea where it was a bit difficult for people to operate. Space telescopes first appeared in the 1970's and astronomers got accustomed to using data collected from them. And then in the late 1980's, the Internet was starting to appear. It gradually dawned on people that it might be possible to operate telescopes from remote locations. Today, a number of professional telescopes are operated remotely; for instance, the Keck Telescope can be operated from Hale Pohaku, a few thousand feet down the mountain. And some instruments operate robotically, such as the telescopes in the LINEAR and NEAR surveys.

Amateur Nights

As frequently happens in astronomy, amateurs eventually adopt innovations that were pioneered by the professionals. Back in the 1980's the late Roger Tuthill (who was a very prominent member of AAI) unveiled one of the first computer control systems for amateur telescopes. Eventually, companies like Meade and Celestron introduced their own versions of computer controlled telescopes and now these "Go-To" telescopes are very popular, so much so that some people worry that they discourage ama-

teurs from actually learning their way around the sky.

During this time, personal computers became more and more powerful, so it was almost inevitable that these Go-To telescopes became equipped with adapters that allowed them to be connected to home computers and controlled through astronomy software.

Any remotely operated telescope needs some means of recording the image. In the 1990's electronic imaging was starting to become popular. By the end of that decade, it was possible for an amateur to buy a digital camera and take images through a telescope. In fact, a good number of AAI members create astounding images in just this way. But truly remote operation required just one more element. And that element was the Internet. Though the Internet soon became a major tool for astronomical information, its application for telescope control was much slower in coming.

Probably the earliest step in that direction were the first astronomical web cams (yes, web cams *can* be used for things other than watching city landscapes or college coeds do strange things to each other). Some of these astronomical web cams around today are a splendid all-sky web cam at New Mexico Skies, the Stardial Telescopic Web cam in Illinois, and the Night Sky Live Network at several observatories. These take one picture every several minutes and update a web page. However, viewers had no control over the imaging. The related subject of web casts may be covered in a future column.

But it was only with the coming of high-speed broadband that amateur remote control really became feasible. One outfit to offer this is called Rent-A-Scope operated by Arnie Rosner. For a fee (about \$25 an hour), you can control a telescope from your computer. Recently, New Mexico Skies, one of the first astronomy resorts and well known to some AAI members, added remote telescope capability, but this is offered mainly to educational institutions on a monthly or annual basis and the fee is rather steep. Other

places also offer remote observing, such as, the Telescopes In Education (TIE) program at Mt. Wilson, but they too mainly cater to educational users.

Slooh: Fools and Their Money...

A few years ago, Michael Paolucci, along with Matt BenDaniel, came up with the latest scheme for remote astronomy. They set up two Celestron C-14 telescopes in the Canary Islands and equipped them with digital camera systems, Internet connections, and a system to put it all together. This became known as Slooh and how it works is that people pay a subscription fee and they get the opportunity to watch as the telescope images various celestial targets. Subscribers also get 15 minutes a year to view any target they want. However, it is questionable as to whether it is actually worth the fee, since if all one wants to do is look at images, they can find images taken through better telescopes for free online at sites like the Digitized Palomar Survey, Sloan Digital Sky Survey (SDSS) Sky Server (a plug for AAI member Dr. Constance Rockosi who is on the SDSS team), and the Virtual Observatory.

An Answer For Alex

To answer the question Alex brought up when he suggested this topic, it would make more economic sense to get your own telescope and electronic imaging equipment, rather than do it by subscription. For example, a four-hour session at Rent-A-Scope can cost at least \$100. Slooh's fee is \$50 per year, but that allows you only 15 minutes of actual control time and you have to watch what other people view the rest of the time. Plus, if some event is happening, there is a good chance these systems will be booked solid. Besides, AAI members like Hank Adams, Ed Carlos, and Cliff Ashcraft have shown on many occasions, that an amateur telescope with a digital camera and good software can produce impressive results even in very light-polluted conditions. And as Bob Dylan would say in *Like a Rolling Stone*, you shouldn't let other people get your kicks for you. Ω