

SDAA

San Diego Astronomy Association

Promising the Sun, the Moon, and the Stars...and Delivering!



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Observatory (619) 766-9118
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A Non-Profit Educational Association
P.O. Box 23215, San Diego, CA 92193-3215

News and Notes

June 2003

SDAA Business Meeting

Will be held at:

SKF Condition Monitoring
4141 Ruffin Road
San Diego, CA 92123-1841
June 10th at 7:00 pm

Program Meeting

Lisa Bruhn, IDA
"Light Pollution"
June 18th at 7:00PM

Mission Trails Regional Park
Visitor & Interpretive Center
1 Father Junipero Serra Trail
San Diego, CA 92119

Snacks * Prizes * Info * Fun
Doors open at 6:30PM
See page 3 for details

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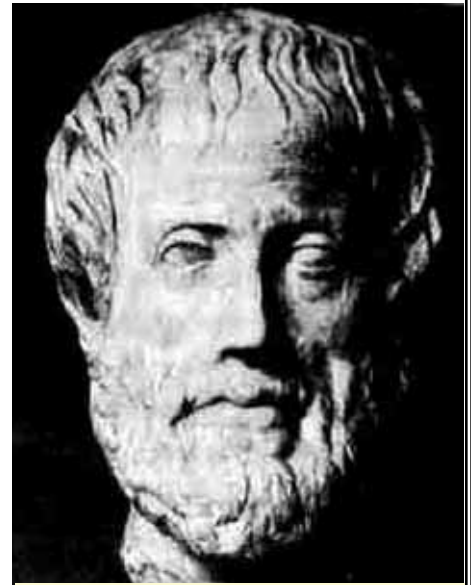
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Astronomy to Astrophysics: A Brief History by Bret Akers

You've probably heard both terms, astronomer and astrophysicist, used to describe professionals who work in the field. What's the difference? Most modern astronomers are really astrophysicists. Until the late 19th century, the science of astronomy was mostly observational or mathematical. Astronomers would take photos, make sketches, and calculate the positions and distances of planets and stars. But they didn't understand the physics behind what they observed and measured. With the advancement of science in the late 19th and 20th century, we've begun to understand the inner workings of celestial objects and have generally based our studies on the laws of physics instead of general observation. Therefore, most modern astronomers are really astrophysicists, but it's important to know the history of what led to the current state of our science.

Most early astronomical theories were geocentric, an Earth-centered view of the universe. Nearly everyone thought that the Earth was stationary and everything else, the Sun, the Moon, the stars and the planets, revolved around us. Isn't that how it appears? The Greek philosopher Aristotle took this logic one step further when he proposed that the Sun, the Moon and the known planets were each fixed to a crystalline sphere. These crystalline spheres were then encased in a grandiose "celestial sphere" that contained all of the stars. Everything in the celestial sphere revolved around the Earth in circular orbits. Why? Because circles were considered perfect form, and nothing in

the heavens could move with anything less than perfect form.



Aristotle

Aristotle's view of the universe worked for a while, but observations of the planets' apparent motion revealed a flaw with Aristotle's reasoning-retrograde motion. We don't see the planets traveling at a consistent speed and direction; sometimes, we'll even see them stop their usual eastward motion and travel west. Aristotle's sacred circular motion was in trouble. Enter Ptolemy.

In the second century A.D., the Greek astronomer and mathematician Ptolemy took Aristotle's model about as far as it would go by adding circular orbits within the circular orbits in an attempt to account for the retrograde motion of the planets. As crazy and complex as this model was, it was accepted as the truth for another 1,400 years.

There were always some who were

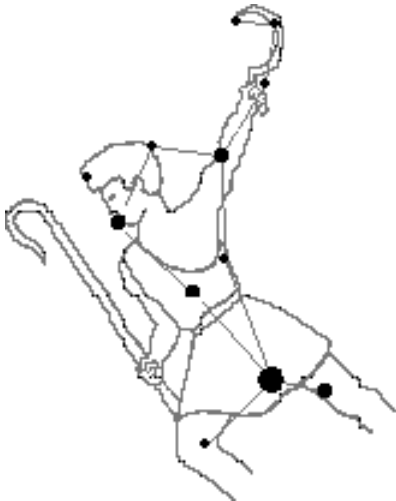
(continued on page 5)

Astronomy 101

Astronomy 101 by Scott Baker

Booties? Bowties? What do the double dots over the 'o' mean?

As you may have guessed by now, this month's article is about "Boötes" (pronounced "Bow - Oh - Tays"). The name "Boötes" is derived from the Greek word for "herdsman," or so some say. Others feel it's Sumerian, derived from "Riv-but-sane," which means the "man who drove the cart," but I don't see how they got that. Anyway, Boötes means many things in many different cultures. To many ancient peoples, they saw Boötes as the Herdsman, herding the Great Bear (Ursa Major) around the sky. Others saw Boötes as an ox cart driver, the oxen being the seven bright stars of Ursa Major. The Egyptians felt that any star that did not set below the horizon was evil and needed to be watched by a guardian, which was a hippopotamus, which is how they saw this grouping of stars. No matter how you see them (I see a kite), the constellation of Boötes has a colorful background.

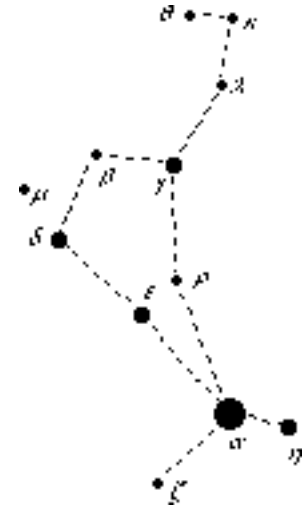


Of the many ancient legends, the one from the Greeks, as usual, is the most popular. Their tale goes something like this: There once was a beautiful woman named Callisto, who caught the eye of Zeus, the king of the Gods. Zeus was so taken by

her beauty that his wife, Hera, was filled with rage and changed Callisto to a bear to spite her husband. Callisto roamed the woods until one day she came across a young man, Arcas. Arcas was Callisto's son, but since she appeared as a bear, he didn't recognize her. She recognized him and rose up to greet him. Arcas, feeling that he was being attacked, readied to throw his spear. Zeus, looking down and seeing that the beautiful Callisto was about to be slain, picked up Callisto and her son Arcas, and placed them in the sky as Ursa Major and Boötes. That is why the brightest star in the constellation Boötes is called Arcturus, another name for Arcas.

So how do you find the constellation Boötes? It is a prominent and large constellation, shaped like a kite, that is presently well up at sunset. If you go out just after dark, you'll find Boötes, due east, lying on his side, about five fists high (50°), with Arcturus to the south and the "kite" to the north. The easiest way to find Arcturus is to "follow the arc to Arcturus." Find the Big Dipper. Follow the arc formed by the three stars in the handle (from the bowl outward), Alioth, Mizar and Alkaid, and you'll come across Arcturus. Arcturus, the fourth brightest star in the sky, is a zero magnitude red giant, only 36 light years from Earth. Being a red giant, it is very old in comparison to our sun and is a good example of how the sun will appear in five to six billion years, a red giant, with a diameter 27 times greater than our sun's present size.

Boötes, a large constellation, contains, remarkably few deep-sky wonders. Some items of interest are the double stars Epsilon Bootis. A beautiful pair a bright 2.9 magnitude yellow and a 4.5 magnitude blue secondary, with only 2.8 seconds of arc separation they are a challenge in scopes of 4" or less. These two beautiful stars are aptly named Izar of Pulcherrima. Another nice pair, easier in small scopes, is Xi Bootis. These two are 5th and 7th magnitude stars, yellow for the primary and orange for the secondary, and are 6.9 arc seconds apart.



If you're in the mood for faint fuzzies, then take a peek at NGC 5248, an elongated galaxy with a bright core at magnitude 10.19. NGC 5466, the lone globular cluster in Boötes, with a diameter of eight arc minutes, 9.1 magnitude; NGC 5660, a very faint galaxy, at 11.8 magnitude; and NGC 5676, another galaxy, a little easier, at 10.9 magnitude, are other faint objects to hunt down.

Boötes A funny name, a familiar shape, a dull interior.

June Program Meeting by Scott Baker

The June Program meeting will be held on June 19th in the theater at the Mission Trails Regional Park Visitor Center. This month's program will feature a presentation about the battle against light pollution by Lisa Bruhn, the local chapter director of the International Dark Sky Association (IDA). She will tell us about the advances the IDA is making in our area, so don't miss this informative talk. Don't forget, we raffle off some nice prizes each month at the program meeting. Everyone that attends gets one chance, just for showing up, but bring your loose cash and buy a few extra chances at winning the raffle. Doors open at 6:30PM and the program starts at 7:00PM. Directions to the MTRP Visitor Center are available on the MTRP web site at www.mtrp.org.



San Diego Astronomy Association

Board Meeting Minutes May 13, 2003 by Melinda Baker

In attendance were Brian Staples, Brian McFarland, Mike Dietz, Scott Baker, Shawn and Diana Kelly, and Melinda Baker.

The meeting was called to order at 7:30PM. The minutes of last meeting were read by Melinda Baker and accepted as read.

The Treasurer's Report by Jennifer Pesquiera was accepted as read.

The Site Maintenance Report by Sean Kelly is as follows. The water tanks have not yet been installed but will be as soon as we can contact the fire department. The pump house roof has not yet been fixed but will be done soon. The weeds have been cut back, and the brush from pad number 35 has been removed. There are reports of the pedestrian gate locks not working and this will be looked into. The location for the east pedestrian gate is being scouted.

Jim Traweek was not present to give the Observatory Report.

The Private Pad Report by Brain McFarland. There are currently five pads available, and those eligible are evaluating the sites. They should be allocated by next month.

The Star Party Report by Mike Dietz. The school star parties are winding down, and there was a good crowd at MTRP. The SDAA will be at Balboa Park for the lunar eclipse, and a volunteer is needed to coordinate the east county star parties. Astronomy Day went well, with fifteen volunteers, and unfortunately the BofA Star Party was clouded out.

The Library Report by Diana Kelly. There is nothing to report. No movement of the library has been made, but hopes are to have it moved by next month.

Scott Baker reports that the 50/50 raffle program is going well, with a set of binoculars as the prize for the next raffle.

The Web Report by Chris Watson via email. The new designs will be available for Board review next month.

Old Business. USD has asked for advice on purchasing new telescopes, and they will be referred to OPT. Terry Stewart will be asked to attend the next Board meeting to plan the upcoming BBQ.

New Business. The Birthday Bash will be held on September 13th and will be a potluck.

The meeting was adjourned at 8:38 PM.

Remembering the Maria Part I by Chuck Taylor

I got the idea for this at a public star party. A fellow had a video camera hooked up to his scope, showing the moon on a TV. He had a good crowd and was busy identifying features. But at one point someone else took over the presentation, naming points of interest on the moon. The only problem is this new guy was turned around and misnaming the various maria. He was busy pointing out Oceanus Procellarium as the Sea of Tranquility. He meant well, but didn't know his way around the moon. So if we are going to hunt objects on the moon, it seemed like a good point to at least agree on the main roads. This month's objects are five of the various seas. We'll look at them one by one. For those more experienced, this will be very old hat. But for those new to the moon, it will give you a good roadmap to help you point out objects in the future. And, in future months, we will go to more difficult objects. In the meantime, see if you can remember them (the Seas) and pick them out without a map, using only your eyes. If you have trouble, finish it with binoculars or your finderscope. If you really want a challenge, try drawing the moon without any visual aids. It's a LOT tougher than it sounds!

MARE CRISIUM

For many, in any test, the first question is the hardest. In fact, for those with a fear of tests, it can be a real crisis. And as the new

moon starts to wax, the first of our maria to become totally visible is Mare Crisium, the Sea of Crisis. This should help make it easier to remember. It appears as an oval, but this is due to foreshortening. In fact, it is out of round in the other direction, being longer east-west than north-south.

MARE TRANQUILLITATIS

By the time you have half of the moon illuminated, a set of seas appears. Although it is not the "official" rabbit, I always see the Sea of Tranquility as the head of a rabbit, with the Seas of Fertility and Nectar as the ears. For those of us who remember 1969, this is a special place as in was there in Mare Tranquillitatis that we as a race first walked on the moon.

MARE FECUNDITATUS

Red Skelton told the story of two rabbits who were chased into a briar patch by a pack of wolves. The first rabbit turned to the second and said, "Do you want to make a break for it or wait a bit until we outnumber them?" And what could serve as the first ear of the rabbit to appear (as the moon grows from the New Moon) but the Sea of Fertility?

MARE NECTARIS

By now you can taste the sweet taste of success as you recognize the Seas of the Moon. And so, the second ear of the rabbit is the Sea of Nectar. In Lunar history, the Nectarian Period is about 3.9-3.8 billion years ago. It started with the impact which formed Mare Nectaris and ended with the Imbrium basin being formed. For the most part, anything older than Nectaris has been obliterated by the bombardment of the Nectarian Period.

MARE SERENITATIS

Going back to the image of the bunny rabbit with the Sea of Tranquility as the head, we come now to the body. And with that, we have a stuffed bunny rabbit, ready to sit on a child's bed. And what could be more serene than an image like that. And so, the body of our rabbit is the Sea of Serenity, Mare Serenitatis.

(c) 2003 by Charles Taylor. Used by permission. <http://groups.yahoo.com/group/lunar-observing>



San Diego Astronomy Association



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 competition is being organized by the Aerospace Industries Association and the National Association of Rocketry (NAR). 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.

In the end, it's all about the future: Future technologies and the kids who will grow up to create them. Many advanced technolo-

gies 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 in 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.

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



A Boeing Delta II (7326) rocket launched the New Millennium Program Deep Space 1 spacecraft on October 24, 1998.



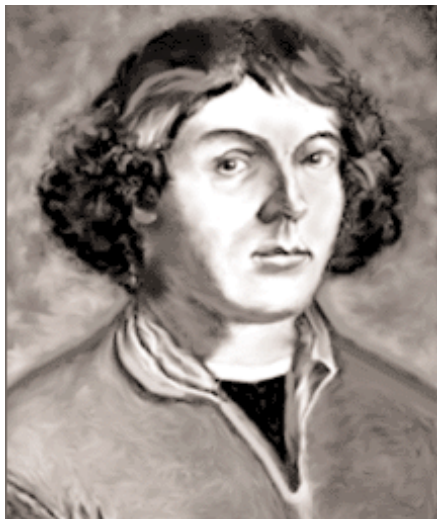
San Diego Astronomy Association

Astronomy to Astrophysics (continued from page 1)

unsatisfied with the view of the universe created by Aristotle and Ptolemy, but it wasn't until the early 1500s that someone emerged with the mathematical skill and insight to do something about it. In 1514, a Polish cleric named Nicholas Copernicus distributed a little book to a few of his friends (they knew that he was the author even though no author was listed). This book, known as the Little Commentary, set out Copernicus' theory of a heliocentric model with the Sun in the middle. In this book were seven axioms that describe his model:

1. There is no one center in the universe.
2. The Earth's center is not the center of the universe.
3. The center of the universe is near the Sun.
4. The distance from the Earth to the Sun is imperceptible compared with the distance to the stars.
5. The rotation of the Earth accounts for the apparent daily rotation of the stars.
6. The apparent annual cycle of movements of the Sun is caused by the Earth revolving round it.
7. The apparent retrograde motion of the planets is caused by the motion of the Earth from which one observes.

The most remarkable of the axioms is



Nicholas Copernicus

number 7. Although some earlier scholars had claimed that the Earth moved (a few even claiming that it revolved round the Sun) nobody before Copernicus correctly explained the retrograde motion of the outer planets. Although this was the most accurate model to date, it wasn't accepted well because the Church was behind the geocentric view of Aristotle/Ptolemy.

About 100 years later, when Galileo developed his telescope and pointed it at the Moon and the known planets, he discovered proof of the Copernican model. He saw that Venus, like the Moon, went through phases, a phenomenon that could only be explained if Venus orbited the Sun instead of the Earth. Additionally, Galileo discovered four moons around the planet Jupiter and was the first person to see craters on the Moon. The Aristotelian/Ptolemaic model was finally seeing the end of its days.

Even though the Copernican model was a significant leap forward, it still had some problems. One of the biggest issues was that Copernicus had not discarded the notion that all motion in the heavens was circular. When Johannes Kepler examined some fairly accurate measurements of the planets' motions, he determined that the planets were not traveling around the Sun in circles. The planets' orbits could be more accurately described as ellipses. This led to the creation of Kepler's three laws of planetary motion:

1. The orbits of the planets are ellipses, with the Sun at one focus of the ellipse.
2. The line joining the planet to the Sun sweeps out equal areas in equal times as the planet travels around the ellipse.
3. The ratio of the squares of the revolutionary periods for two planets is equal to the ratio of the cubes of their semi-major axes.

This means that planetary orbits are elliptical; at times planets are closer to the Sun than at other times; the closer a planet is to the Sun, the faster it moves; and, the closer a planet is to the Sun, the shorter its year is. This was a significant achievement, but Kepler didn't understand why the planets seem to follow his complex, yet



Johannes Kepler

exact, rules of motion. It took the genius of Isaac Newton to take Kepler's work to the next level.

Isaac Newton co-invented the mathematics of calculus and used it to explain the laws of astronomical motion in terms of what we now call gravity. We've all heard the myth of his being hit on the head with an apple falling from a tree. It probably never happened, but he was inspired to describe a single law that governed all of the observable motion in the universe. This was his Law of Universal Gravitation.

The ante was upped one more time in the early 20th century by Albert Einstein. In 1913, he published his Special Theory of Relativity that showed how Isaac Newton's laws worked well at speeds and velocities common to everyday life but broke down at very high speeds—speeds that approached the speed of light. This theory, and subsequent experiments, proved that mass, length, and time are all dependant upon the speed of the observer. A few years later, Einstein finished his General Theory of Relativity, which dealt with Isaac Newton's Law of Universal Gravitation. Einstein said that objects don't influence the motion of other objects by simply exerting the gravitational force. The motion is influenced because the mass of an object actually warps space around it, affecting not only space, but time. Highly massive objects can, in effect, cause time to slow down.



San Diego Astronomy Association

Camp With The Stars by Mike Dietz

We were rained out at our last time at Heise in early May, but I don't think that will happen this month. We have 2 programs this month. First we will be at William Heise campground on June 7th, and then at Paso Picacho campground on the 21st. These are both very nice campgrounds with numerous hiking trails and excellent facilities. As an added bonus, on the 21st, a group called the Canyoneers will be guiding a hike up Stonewall Peak. They will be meeting at the trail head, which is right across the street from the entrance to Paso Picacho, at 4 p.m. If you like, you can come up on Friday and spend the whole weekend. As always, those who bring a telescope to share with the campers can camp for free. Please contact me at (619)334-9930 if you will be attending so I can make the necessary arrangements with the rangers and give you any additional details.

To reach William Heise Campground take Hwy 67 north through Ramona which turns into Hwy 78. Continue east on Hwy 78 through Santa Ysabel heading towards Julian. About a mile before Julian, turn right on to Pine Hills Rd. and head South. Continue about 2 miles to Frisius Drive and turn left. Head East on Frisius Dr. about 1 1/2 miles to the park entrance.

To reach Paso Picacho Campground take Hwy 67 north through Ramona which

turns into Hwy 78. Continue east on Hwy 78 through Santa Ysabel heading towards Julian. From Julian head South on Hwy 79 to the campground (on the right). From central and South San Diego take I-8 East to Hwy 79. Head North on Hwy 79 to the campground (on the left).

Design Proposals for 40th Anniversary Website Coming Soon by Christopher Watson

In celebration of the 40th Anniversary of the San Diego Astronomy Association's incorporation (yes, the club's articles of incorporation are dated February 23, 1963!), I am undertaking a complete, from-the-ground-up redesign of the SDAA website at www.sdaa.org. The 40th Anniversary site will include a totally new, world-class look and feel, a greatly reorganized (and intuitive) page tree, new easy-to-use menu and navigation systems, and will also introduce several key features intended to make the site more useful to the casual visitor, and more utilitarian for our members.

To begin with, several general design ideas for the site's home page are being worked on. These home page designs will serve as examples of how a typical page on the site might look under each of the proposed schemes. The Board of Directors will review

the submitted designs and assemble a suitable array of exemplary possibilities, which will be made available for review by the membership sometime in June via a special link on the current site's home page. SDAA members who are signed up on the club's Yahoo group will then be able to submit their personal choice for the design they think is best via a poll which will be opened by our Moderator, Scott Baker. The Board of Directors will take the results of that poll into consideration when making a final determination at its July Business Meeting as to which design will ultimately be used for the 40th Anniversary site.

An announcement will be made on the SDAA Yahoo group at the time the proposed designs are available for review, along with instructions for how to access them. Until that time, if you have any comments or suggestions regarding our website, and what you think might be good to include in a redesign of it, please contact me at skygx@earthlink.net or 858-538-0442.

Show Your SDAA Pride...

with high-quality SDAA merchandise! Display your membership in style with SDAA t-shirts, polo shirts, and hats. What better way to keep warm on those cold nights at TDS than with an SDAA hooded sweatshirt? Be the talk of the road with a 'Look Up!' license plate frame. And be sure your fellow members know who you are by wearing an official SDAA nametag. For more information, visit the merchandise section of the website at <http://www.sdaa.org/SDAAContacts/SDAAContacts.htm> or call Diana Kelly at (858) 603-3323.





San Diego Astronomy Association

Lipp Observatory Update by Jim Traweek

The observatory will be closed for the next month or so. I have removed the mirrors to take them to Jerry Brunache, our optician. He will replace the index marks that somehow have been erased from the primary, figure the exact backfocus measurement required, and check the basic quality of the mirrors.

We will also be making a slight design change and repairing a major problem I've found on the mirror cell. Due to an overlooked item in construction, (and don't take that as a negative, it's a beautifully engineered instrument), a worn part has allowed the primary to shift almost a 1/8 inch. This is MAJOR!

No wonder I've struggled to get it collimated. I've truly worked hard at it and have gotten it decent but never quite right. When put back together, I'm confident it will finally perform as a Ritchey Chretien should.

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Chuck Taylor
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Christopher Watson

SkyWatch for June, 2003

John Mood

[Times PST] [* = Easy] [** = Moderate] [*** = Difficult]

Fri., 30 May ---- NEW MOON, 9:20 p.m.

Sat., 31 May ---- STAR PARTY @ Tierra del Sol.; try to spot 23-hour-old Moon!

---- ANNULAR ECLIPSE of the SUN in Antarctica; PARTIAL ECLIPSE in Alaska, Europe, the Near East & northern Asia.

Sat., 14 June ---- FULL MOON, 4:16 a.m.

Sat., 21 June ---- MERCURY is only 1/2° south of VENUS near

ALDEBARAN this morning; notice that I said this morning. (See below, "Morning Planets.")

---- STAR PARTY @ Tierra del Sol.

---- SOLSTICE, 12:10 p.m.; SUMMER begins!!

Sun., 22 June ---- URANUS is 3° north of MARS this morning; notice that I said this morning. (See below, "Morning Planets.")

Sat., 28 June ---- STAR PARTY @ Tierra del Sol.

Sun., 29 June ---- NEW MOON, 11:39 a.m.

EVENING PLANETS:

Boo! Hiss! -- SATURN [*1/2] is virtually out of sight 'cept for binocs early in month. JUPITER [*], moving from Cancer the Crab toward Leo the Lion, is also dropping toward the horizon so good telescopic viewing is limited to just a while after it gets dark.

MORNING PLANETS:

PLUTO [***] is in Ophiuchus & well-placed for viewing by midnight; it's a toughie but I caught it twice visually in my 10" f.4 Dob (w/ my younger eyes + a superb sky chart). MARS [*], leaving Capricornus the Goat for Aquarius the Water Carrier, is large enough for surface detail to be seen telescopically; on the morning of the 22nd it is close to URANUS [*1/2] (see above). NEPTUNE [**] is also in Capricornus. VENUS [*], moving from Aries the Goat into Taurus the Bull, hangs in there most of the month. You can spot MERCURY [*1/2] in Taurus fairly easily only because it passes much brighter Venus (see above); even so, you may need binoculars.

BEGINNING OBSERVERS:

MARS is already almost as large & bright as at its last great apparition in '88, & it's only the beginning of its best in 56,000 years (acc. to one source) or 73,000 years (acc. to another). It will peak the last week in August. So git goin' now, esp since one can see the southern polar cap shrink dramatically in the next 2 months if you do so.

Visual viewing can be heightened significantly if one makes drawings of what one sees. Use a # 2 or softer pencil on non-slick paper & also have an eraser. Smooth & blur yr markings w/ a finger to make them correspond to what you see.

Doing all of this forces the eye to notice subtle details. I'm looking at the many drawings I made late summer & early fall of '88. They are not aesthetically pleasing. I'm an awful artist & have great difficulty even drawing a straight line. But those drawings forced me to see details on the surface of the planet I wd've missed otherwise.

'Course, filters also help. For small scopes, use yellow filter (W15). Larger scopes can use red or orange (W25, W23A) for polar cap, dark markings & dust storms; green (W58, W64) for fog & frost; blue (W38A, W80A) for water-vapor clouds. For example, if a patch is bright in red but dim in blue, it is a dust cloud.

One final tip: Try viewing nearer the coastline or anywhere anytime the atmosphere is more humid. Early telescopic observers discovered that some moisture in the air steadies the view for planets & double stars. My all-time best views of all of the planets have come from where I live in Ocean Beach, looking out over the Pacific w/ no light pollution & a slight haze in the air.

TIERRA DEL SOL

LAT = 32° 36' 46" N (± 0.1'), LONG = 116° 19' 55" W (± 0.1'), ELEV = 3710' (± 5'), at the bathroom, as determined from USGS 7.5 min 1/24000 map.

Send comments & questions to me by phone (619/225-9639), USPS (4538 Long Branch Av., San Diego, CA 92107) or my e-mail address 1happyalien@cox.net.

¡HAPPY VIEWING!





San Diego Astronomy Association

Help Needed! by Mike Dietz

I first got involved in the star party program about 10 years ago and took charge of it about 6 or 7 years ago. I remember how good it made me feel to see the kids get so excited looking through the telescope, and 10 years later it still does. At that time we were doing about 2 to 4 star parties a month. Never in my wildest dreams could I have imagined that we would be averaging about 14 star parties a month as we are now. This couldn't be done without the help of many of our members volunteering their time and bringing out their own equipment to share with the public. One of the great things about astronomy is that you don't have to sell it to anyone. All you have to do is expose it to people and it sells itself. I wouldn't trade the past 10 years for anything. I have met a lot of great people and have been involved with something truly remarkable. Over the past decade, this club has brought astronomy to over 200,000 people.

Some of you may have heard that I have been in somewhat poor health a lot this year. As far as I know it's nothing serious, but I have been having trouble getting healthy and part of the reason may be all the time and energy I have been putting into the star party program. Unfortunately, for health and personal reasons, I cannot continue to do all I have been doing so I am asking for help in taking over some of the things I have been doing. June through September tends to be much slower than the rest of the year so now is a good time to get your feet wet. The more people who volunteer the less work there will be for any one person.

I would like to thank Stu Hall (a.k.a. Big Dog) for volunteering to take over writing the star party information for the newsletter. Here are some of the other things I am looking for help in: Sending out the monthly and/or weekly star party update emails; East County Star Party Coordinator; bringing and setting up the informational handouts for the monthly Stars In The Parks events; and Camp With the Stars presentations. I hope to continue my involvement with the star party pro-

gram, but at a much reduced level. I will be more than happy to assist or answer questions for anyone who volunteers about what needs to be done with these duties. If you can help please contact me or any of the board members. Thanks.

June Star Parties by Big Dog

For the month of June we begin at the Reuben H Fleet for the monthly "Stars in the Park" program on Wednesday June 4. We will be set up not far from the Reuben H Fleet Science Center in Balboa Park, westward of the water fountain towards the Prado. We generally start showing up around 6pm.

On Friday June 6 we will be at Carlton Oaks School at 93530 Wethersfield Road in Santee for a star party starting at 8pm. From Mission Gorge Road heading north, turn left onto West Hills Parkway and head north. Turn right onto Carlton Oaks Drive and left onto Wethersfield Road and turn left.

Don't stow away that scope yet because on Saturday June 7 you can enjoy the first Camp with the Stars program at William Heise Park just outside Julian.

Tuesday June 10 we will be at an 8:15pm star party at Fletcher Hills Elementary in El Cajon. The school is located at 2330 Center Place. To get to the school, from I-8 heading east, merge onto the CA-125N. Take the Navajo Road exit and turn right onto Navajo Road. Turn Left onto Fletcher Parkway. Turn Right onto Garfield Avenue. Finally turn left onto Center Place.

To finish the week join us at Mission Trails Friday June 13th for our second Stars at the Park Program at Mission Trails Regional Park in the Kumeyaay Lake Campground day use parking area. We will be setting up around 7:00ish or so. If you're heading east on Mission Gorge Road, continue past the visitors center and over the hill into Santee. At the first light, near the bottom of the hill, will be Father Junipero Serra Trail. Turn left at the light. The camp-

ground will be on the right

We have a well deserved break the following week allowing everyone the chance to catch the monthly program meeting Wednesday June 18. And then on Saturday June 21, you have your choice of either another Camp with the Stars program at Paso Picacho or "Stars at the Site" at Tierra Del Sol. For an extra bonus, the following week offers another opportunity for a "Stars at the Site" as we end the June Star parties on Saturday June 28.

For those who would like to help the club and volunteer for star parties, contact one of our Star Party Directors:

North Region Part Director --
Bob Nanz cathynanz@nctimes.net
(760) 747-0717

South Region Party Director --
Rich Bentley rbentley@ucsd.edu
(619) 231-8791.

They will be thrilled to put you on the list of regular volunteers contacted as star parties are scheduled or canceled after the newsletter is published; if they know you are interested, they can keep you updated. Also, many of you have email address changes and such. Please let us know what email address(es) you want to use to provide notices of future events.

If you are interested in scheduling a star party for a school or group you are affiliated with, please call any of the above contacts at least 6 to 8 weeks in advance to make sure you get the date you want.

Party On Stargazers!



Dark Matter

and other puzzling topics

Some more brain teasers to keep the gray matter in shape!

Email your answers to newsletter@sdaa.org by June 21.

Winners will see their name in lights. Well, OK, in print in the next issue.

1. What is the name for the curve formed by the intersection of the plane of the Earth's orbit and the celestial sphere?
2. What is the term for the slow change in direction of Earth's axis?
3. Whose carefully recorded positions of Mars and other planets were used by Kepler?
4. How big is an astronomical unit?
5. Approximately how old is the Solar System?
6. What caused the van Allen belts to be formed?
7. How long does it take light from our Sun to reach Neptune?
8. What is the area of our galaxy where stars are born?
9. How wide across is our galaxy?
10. How close to the center of our galaxy is our sun?
11. What is the term for the time it takes the moon to complete one orbit relative to the stars?

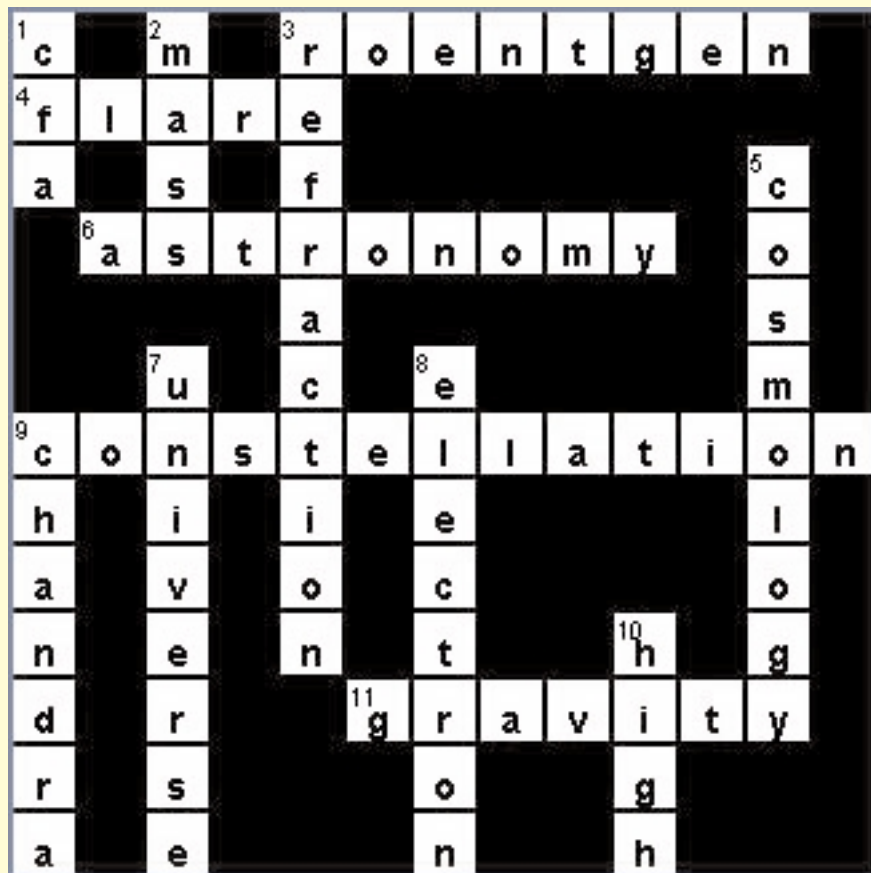
Congratulations to this month's Dark Matter puzzle winners:

Ken Hull
Dale Johnson
Shawn Kelly
Jose Magsaysay
Mary & Rosemary Todd

May Program Meeting Recap by Scott Baker

The May Program meeting saw approximately 45 members enjoy a fine presentation from Jacob Rucker on his Greater San Diego Science Fair Junior Division project. Jacob's project went on to win second place in the California State Science Fair in the Physics and Astronomy division, a very nice achievement. Congratulations Jacob! The meeting was capped by a very informative and fun talk by Gary Peterson on "Mercury, the Forgotten Planet" After the lecture, our monthly raffle was held and Brian Staples walked away with the grand prize, a pair of 12X60 Binoculars, and Diana Kelley took home \$65.50 from the 50/50 raffle, the second time she's won the 50/50 prize. Many lesser prizes were awarded to various members. I'd like to thank Mike Fowler of Oceanside Photo and Telescope for selling us the prizes at a "substantially" reduced cost. Thanks Mike! If you haven't attended a Monthly Program Meeting in a while, you're really missing out, so stop on by and enjoy a free evening's entertainment.

Solution to last month's crossword puzzle:



Treasurer's Report by Jennifer Pesqueira

With the addition of the following members we now have a total of 547 SDAA members. Please welcome Jim Bueche, Berry Gerrard, Ignacio Gonzalez, Jerry Hilburn, Vikas Jain, Jay Lavine, Ray Madden, William Pruitt, Javier Rosales and Natalie and Sky Youngblood. Welcome to SDAA and may you enjoy clear dark skies.



San Diego Astronomy Association

Astronomy Days Thank You by Francis French

**Education Programs Coordinator
Reuben H Fleet Science Center**

A big THANK YOU to everyone who came out on Thursday and Saturday to support our Astronomy Days events. It was wonderfully attended - we estimate 350 people came here to observe the eclipse - and all of the local TV stations (English and Spanish speaking) covered the story repeatedly from the early morning news until after 10pm. We were really pleased with the number of telescopes you brought, the different types, and how helpful everyone was with the inquisitive public. As well as the huge amount of TV coverage we got, the UT and other publications discussed both of our groups in some depth. It was great to get the word out about the Fleet and SDAA, and I am sure that the huge amount of free, high-profile publicity will

only swell your membership and raise awareness.

SDAA Participation in Astronomy Days by Mike Dietz

The club would like to thank Roy Ang, Scott Baker, Katherine Boyd, Peter Debaan, Mike Dietz, Doug Hansen, Shawn Kelly, Jose Magsaysay, John Restivo, Terry and Cindy Stewart, and to everyone else that showed up for the Astronomy Week at the Fleet events. I apologize if I didn't get your name, but it was a little crazy that night. I had several tables set up with information on astronomy and the club as well as some pictures. I also passed out cards to several teachers that were there and heard about our star party program. All in all it was a great night.

Acknowledgments by Mike Dietz

The club would like to thank Roy Ang, Bill Armstrong, Bob and Stephanie Austin, Scott Baker, Don Beamann, Dean Belcher, Rich Bentley, Peter DeBaan, Mike Dietz, Stu Hall, Don Hamm, Doug Hansen, Shawn, Diana, and Tiffeany Kelly, Jim Lawler, Jose Magsaysay, Nick Marilao, Bob May, Garry Mose, Bob Nanz, Duane Naugle, Ken Olson, Jennifer Pesqueira, John Restivo, Mary Jo Rushing, Gregory Santos, Brian Staples, Cindy and Terry Stewart, Rich Strobel, Jim Traweek, George Varga, Joe Vidovich Jr., Chris Watson, Bob Wetzel, Bill Whalen, and Marjorie White for helping with the school star parties, Camp with the Stars, and Stars in the Parks programs. Your efforts are greatly appreciated by the students, parents, and teachers.

Clip and Save

2003 Board of Directors and Chairpersons

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SDAA Calendar of Events

June 2003

S	M	T	W	T	F	S
1	2	3	4 Stars in the Park Balboa Park	5	6 Star Party at Carlton Oaks, 8pm	7  Camp w/the Stars Wm Heise Cmpgd
8	9	10 SDAA Board Meeting SKF 7pm Star Party at Fletcher Hills Elem 8:15pm	11	12	13 Stars in the Park MTRP	14 
15	16	17	18 Program Meeting "Light Pollution" MTRP 7pm	19	20	21  Star Party at TDS Camp w/the Stars Paso Picacho
22	23	24	25	26	27	28 Star Party at TDS
29 	30					

The Back Page

For Sale

Meade 12.5" Starfinder dob, Telerad, 2" focuser, \$800 obo. Meade 8" SCT GEM, Telerad, 2" diagonal, 26mm Plossl, \$800 obo. Steve (619) 843-9632(w), (858) 484-2349 (h).

For Sale

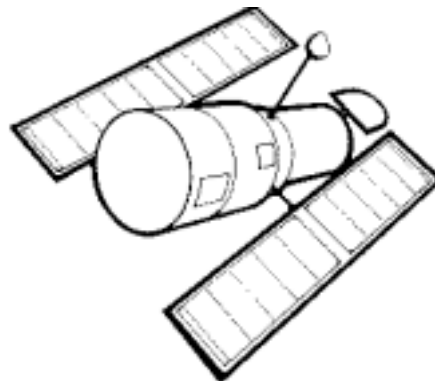
Celestron heavy duty field tripod, Old celestron wedge, fork mount for late 70s vintage C8. Will sell all together or piecemeal, make me an offer I can't refuse. Vince vbert@ipapilot.org

For Sale

Meade 416XTE with color filter wheel and filters, 201XT guider, Adaptec 2940 SCSI card and cable for PC. 1 year old. Complete system. Excellent condition. Good system for the beginning astrophotographer. Cost \$2890 will sell for \$2400 and will deliver. Will email photo on request. Ron r.d.brant@worldnet.att.net

For Sale

Celestron C5 telescope and many accessories including eyepieces, filters, etc. Would like to sell as a package. Price is negotiable. Chuck (619) 461-9769.



Hubble Space Telescope. Image courtesy of Challenger Center for Space Science Education <http://www.challenger.org>

MEMBERSHIP INFORMATION

Send dues and renewals to P.O. Box 23215, San Diego, CA 92193. Include any renewal cards from Sky & Telescope, Astronomy, or Odyssey magazine in which you wish to continue your subscription. The expiration date shown on your newsletter mailing label is the only notice that your membership in SDAA will expire. Dues are \$35 for Contributing Memberships; \$25 for Senior (Basic) Membership; \$3 for each Family membership. In addition to the club dues the annual rates for magazines available at the club discount are: Sky & Telescope \$29.95, Astronomy \$29, and Odyssey \$25.46. Make checks payable to S.D. Astronomy Assn. PLEASE DO NOT send renewals directly to Sky Publishing. They return them to us for processing.

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