



the Skyscraper

vol. 37 no. 6
June
2010

Amateur Astronomical Society of Rhode Island ★ 47 Peeptoad Road ★ North Scituate, Rhode Island 02857 ★ www.theSkyscrapers.org

Seagrave Memorial Observatory is open to the public

weather permitting

Saturdays 9pm - 11pm

Please note that the observatory may be inaccessible for after extended periods of heavy rain. See web site for updates.

Directions to Frosty Drew Observatory

From Route 95 S, take slight left at Route 4 (signs for N Kingstown). Continue 9.9 miles to Route 1 S/Tower Hill Rd. Continue 19.7 miles on Route 1. Make a U-turn and bear right onto Route 1A/Old Post Road. After 0.5 miles take first right onto Park Ln. Follow Park Ln for 0.6 miles.

Phases of the Moon



4



12



19



26

OTHER NOTABLE EVENTS: Ceres cross the Lagoon Nebula (M8) on the 1st. Jupiter is $\frac{1}{2}^\circ$ south of Uranus on the 8th. Solstice is on the 21st. Pluto is at opposition on the 25th. A partial lunar eclipse occurs on the 26th, but is best viewed from the southwestern Pacific Ocean and is not visible from Seagrave Observatory.

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June Meeting with John Briggs

FRIDAY, JUNE 4, 7:30PM AT FROSTY DREW OBSERVATORY

Antarctic Odyssey: Winter-Over at South Pole Station

Long-time Skyscraper John W. Briggs, currently faculty astronomer at the Clay Center Observatory in Brookline, Massachusetts, will describe with slides his 1994 experience living at the Geographic South Pole while working for the Center for Astrophysical Research in Antarctica, headquartered at Yerkes Observatory of the University of Chicago. John was involved building a 24-inch infrared telescope and related experiments at Yerkes. The telescope, known as SPIREX for South Pole Infrared Explorer, was mounted at South Pole in time to observe the July, 1994, crash of Comet Shoemaker-Levy 9 into the planet Jupiter.

With 26 other members of the U.S. Antarctic Program, John weathered the year-long "winter-over." Once begun, winter-over is an irreversible commitment, since the Program's special LC-130 ski planes can't land in the winter temperatures – which in 1994 were sometimes as low as 106 degrees below zero (with wind chill, as low as -190 degrees F.). Wintering at Pole is a fantastic personal adventure, but not without the po-

tential for tragedy. John's closest collaborator in 1994, young Australian astrophysicist Rodney Marks, later died at Pole during his own winter-over experience.

John holds a BA in physics from San Jose State University. He worked at many astronomical observatories before returning to New England five years ago as an invited visiting scholar at Phillips Academy, where he and his wife Liz were students in the 1970s. Long devoted to astronomy, and in the 1980s a trustee at Seagrave, his hobbies include collecting and restoring antique telescopes as well as photography. John enjoys public speaking and hopes to delight you with his perspective on the total South Pole experience – the strange natural environment, the odd social atmosphere, and the challenging, ongoing science. His photographs have appeared in many publications and have been used by the National Geographic Society. Like all winter-over staff in U.S. Program, John received the nation's Antarctica Service Medal.



Images: On left, John outdoors during South Pole night with the IRPS infrared spectrophotometer, an instrument used to measure sky brightness. On right, the 1994 observing team with University of Chicago's South Pole Infrared Explorer Telescope, a 24-inch reflector designed and built specifically for the extreme environment at South Pole Station.

Tom Thibault

President's Message



Dear Skyscrapers Members,

First, let me again say how impressed I was with the number of ballots cast at our April election. It exemplifies the involvement of our membership for the good of our society. I would also like to thank former President Bob Horton, 1st Vice President Bob Napier, Member at Large Roger Forsythe, Trustee Steve Siok and Librarian Bruce Merrill for all their efforts and contributions during their tenure.

Please join me in congratulating our newly elected 1st Vice President John Briggs, Members at Large Mercedes Rivero and Gene Kusmierz, and Trustee Pat Landers. I'm looking forward to working with them as President to serve you and our society as we continue the traditions of Skyscrapers, including educating our membership and the public in the wonders of astronomy.

The good weather has finally begun to arrive and Bob Forgiel has again, with the help of our membership hosted a number of Public Outreach Programs during April and May. May 15th's public viewing night, which also featured our most recent Outreach Program for our own Donna Gaumond and her class of children from Metcalf School, was a great time. All of our telescopes were opened and manned, and Jim Hendrickson brought one of his own personal telescope, an APM 130mm f/6 apochromatic refractor. The enthusiasm displayed by all those who

attended was fantastic and we truly displayed our commitment to education. Since becoming a member I have always been impressed with the camaraderie displayed by our membership, and events like these only reinforce this view.

We have been invited by one of our astronomical partners here in Rhode Island to visit their facility and we have accepted. Our June Monthly Meeting will be held at Frosty Drew Observatory in Charlestown, RI. It's always a pleasure to visit other organization's facilities. It provides us a great opportunity to see how they have developed their programs to serve the public as we do. I look forward to seeing all of you who can attend and am sure a good time will be had by all.

On an astronomical note, Saturn and its moons continue to provide a great show in the evening, so get out and enjoy the view. Those of you that are early risers like me are now being provided a view of Jupiter above the eastern horizon. Jupiter is my favorite planet to observe and within the next couple months I will be out before the sun rises to catch glimpses of this giant planet that has lost its southern cloud band, leaving the Red Spot floating independently amongst the lighter gases.

Enjoy the stars,
Tom Thibault
Skyscrapers President

The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are usually held on the first Friday of the month. Public observing is usually held every Saturday night at Seagrave Memorial Observatory, weather permitting.

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Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions

Submissions to The Skyscraper are always welcome. Please submit items for the newsletter no later than **June 20** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

E-mail subscriptions

To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

Executive Committee Meeting

WEDNESDAY, JUNE 2ND AT 7PM
SEAGRAVE OBSERVATORY

All members are welcome to attend.

StarConn

SATURDAY, JUNE 5TH
WESLEYAN UNIVERSITY,
MIDDLETOWN, CONNECTICUT

Presented by the Astronomical Society of Greater Hartford and with the kind and generous cooperation of the Astronomy Department of Wesleyan University.

<http://starconn.asgh.org>

In Memory...

Francine Jackson reported that Les Coleman passed away on the evening of May 26. Les had been a regular at Frosty Drew Observatory for many years.

It's Full of Stars!

Dave Huestis

From time to time someone will ask me why I haven't written about a specific topic. Since I usually write my column only once a month, I concentrate on astronomical events that any casual stargazer can observe. That includes annual meteor showers, the phases of the Moon, the bright planets, the northern lights, and any prominent sky phenomenon.

Occasionally I'll highlight one of my favorite constellations. When I was recently asked to write about Hercules, I thought I had done so not long ago. Was I wrong! It has been several years. Somewhere along the line as I have gotten older, the passage of time has followed some perverse inverse square law – the older I get the faster time passes.

So for all of you who regularly read this column, I present one of those constellations which contains a magnificent astronomical object which can lure me out into the often murky, mosquito-infested skies of summer: Hercules.

Did the title of this article catch your eye? Did it seem familiar somehow? The sci-fi gurus among you will quickly recognize the title quote as exclaimed by David Bowman as he enters the "stargate" in 2001: A Space Odyssey. A similar psychedelic slit-scan effect was used during the early 70's for the Doctor Who series opening title sequence. Though the object I love to examine does not display any of the motion the above mentioned special effects do, it is definitely "full of stars," hundreds of thousands of stars!

I'm referring to the showpiece of northern hemisphere globular clusters, M13 in Hercules (so called for being the 13th entry in the sky catalog of 18th century astronomer Charles Messier). Before I describe this beautiful cluster of stars, let's examine the Hercules star pattern. It has a wealth of mythology associated with it.

The origins of this constellation "giant" remain shrouded in the dim recesses of mankind's past. The fact that this particular pattern of stars has always represented a giant lends credence to the idea that its form has remained unchanged for perhaps thousands of years. In this scenario, different cultures merely borrowed the form and tailored it to their own circumstances. The "kneeling one," as the ancient Greek astronomers knew him, has come to us now in the form of Hercules.

Let's examine the myth behind the man. Hercules was the son of the god Jupiter and

a mortal woman, Alcmene. This union gave Hercules superior strength and other powers mortals did not possess. He was first put to the test as a child when he strangled some snakes the goddess Juno had sent to destroy him. You see, Juno was Jupiter's wife, and she was fed up with the philandering of her husband with mortal women.

As a young man, Hercules' strength and courage were both fully tested by King Eurystheus to whom Hercules owed allegiance. The king was jealous of Hercules fame as a hero, so he imposed twelve labors upon him. The king really wanted Hercules out of the way, since any one of the twelve tasks could have easily killed him. To make a long story short, Hercules succeeded in all the tasks, elevating him to even higher hero status.

However, Hercules' ascension to the starry heavens is a tragic one. One day, as Hercules was about to set out on a journey, his wife Deianira presented him with a cloak. Unfortunately, she had received it as a gift from the dying centaur Nessus, whom Hercules had slain. The cloak was poisoned with the centaur's blood. Hercules knew his undignified death was at hand, so he built a funeral pyre on Mount Etna, placed himself upon it, and set it afire. The poet Ovid, in his "Metamorphoses," described what transpired next:

*...Almighty Jove
In his swift car his honour'd offspring drove;
High o'er the hollow clouds the coursers fly,
And lodge the hero in the starry sky.*

In today's sky we find the mighty Hercules, kneeling upon the head of Draco the Dragon, holding a club in one hand, and a branch in the other.

Now that we know a little about the mythology of Hercules, where can one find this constellation giant? On an early June evening Hercules can be found about halfway up in the eastern sky at around 9:00 pm. Four main stars, called the keystone, outline the body of Hercules, while two streams of stars form his arms and another stream comprise his legs. Though his extremities look like a stick figure, Hercules has been bulking up on his body. Please see the accompanying star map.

What makes the pattern a little difficult to recognize is that Hercules rises on his side, with his head facing south (right). And, to make matters worse, when Hercules passes

directly overhead later in the evening, he hangs upside down in our heavens.

Once you've located Hercules, there is one grand object you should hunt for. It is a globular cluster of stars that is visible to the naked eye in a dark sky. This cluster was discovered by Edmund Halley in 1714. Though thought to be a nebula, it is the showpiece of northern hemisphere globular clusters.

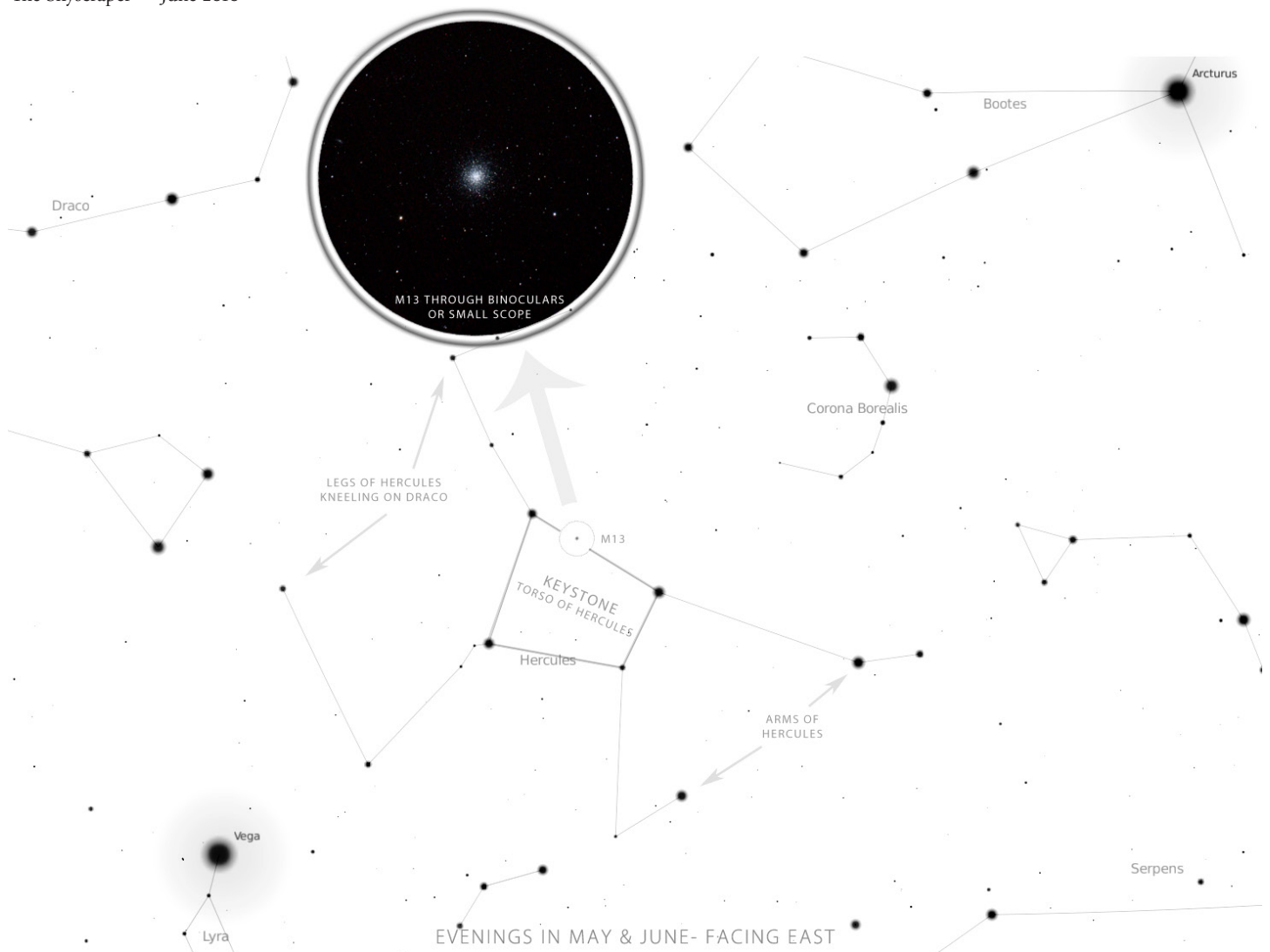
To find this magnificent cluster of stars please reference the star map once again. M13 is between the two stars that form the western side of the keystone. It is about 1/3 of the way from the northern most star of the keystone. Try locating it using a pair of binoculars. It looks like a tail-less comet.

Once you've found it, use a telescope if you have one. A small refractor will show it as a small diffuse patch of light, much like the nucleus of a comet. Larger scopes, say a four- or six-inch reflector, will begin to resolve individual stars within this beautiful beehive of stars. And the beehive description is quite apt, for if one could speed up time you would see these stars, which are all gravitationally bound to the cluster and number about 300,000, "orbit" the cluster like bees around a hive.

One of my favorite turn of the 20th century authors is Garrett P. Serviss. I often quote him in my columns because he had such a descriptive and poetic style of writing. For your enjoyment I have excerpted two quotes concerning M13 from his wonderful book, Pleasures of the Telescope.

"...smaller instruments reveal only the in-running streams and the sprinkling of stellar points over the main aggregation, which cause it to sparkle like a cloud of diamond dust transfused with sunbeams." "It is a ball of suns. Now you need a telescope. You must have one. You must either buy or borrow it, or you must pay a visit to an observatory, for this is a thing that no intelligent human being in these days can afford not to see. Can it be possible that any man can know that fifteen thousand suns are to be seen, burning in a compact globular cluster, and not long to regard them with his own eyes?"

Furthermore, another popularizer of astronomy, Mary Proctor, in her 1925 edition of Evenings with the Stars, best summed up my initial thoughts about this beautiful cluster of suns saying, "The cluster is a mass of glittering starlight, each star a sun pouring forth supplies of light and heat, and all the electric and chemic influences which are as



necessary as light and heat for the welfare of living beings — if any exist — on planets circling around these orbs ... If such worlds in space are a reality, and if they are inhabited by reasoning beings like ourselves, it is a fascinating idea to imagine what must be the appearance of the sky to dwellers on a planet circling around one of the stars in the centre of such a cluster as 13 Messier.”

On the next clear and moonless night, go out and locate the great Hercules in the sky. Binoculars will certainly show you M13, but

a telescope will reveal all its splendor. Think about the above descriptions while you enjoy the image. Serviss and Proctor both had a way with words. Also remember Bowman’s exclamation. You may not enter a stargate, but starlight can certainly provide you with a trip through the universe.

And don’t forget that the local observatories are always “full of stars,” providing the skies are cloud-free. On the next clear Saturday night take a ride out to Seagrave Observatory (<http://www.theskyscrapers.org>)

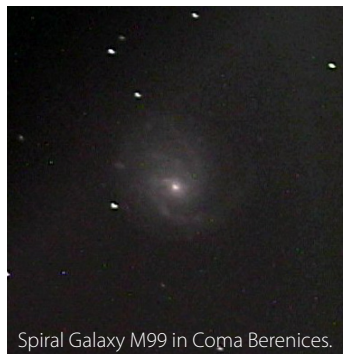
in North Scituate. Or, on the next clear Tuesday night stop by Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence. Check out their websites for the public night schedules and opening times.

Keep in mind we can’t begin to observe the stars until around 9:30 pm the closer we get to the summer solstice, which occurs at 7:28 am on the 21st.

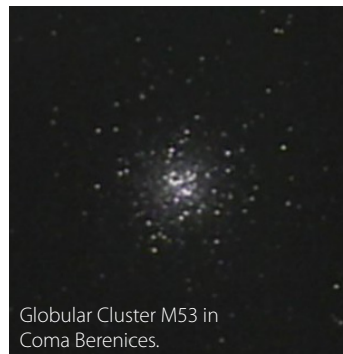
Until next month, keep your eyes to the skies.



Planetary Nebula NGC 3242, the Ghost of Jupiter in Hydra.



Spiral Galaxy M99 in Coma Berenices.



Globular Cluster M53 in Coma Berenices.



Irregular Galaxy M82 in Ursa Major.

Images by Steve Hubbard using a MallinCan and a 10 inch Meade SCT and the 16-inch Meade SCT at Seagrave (M82 only).

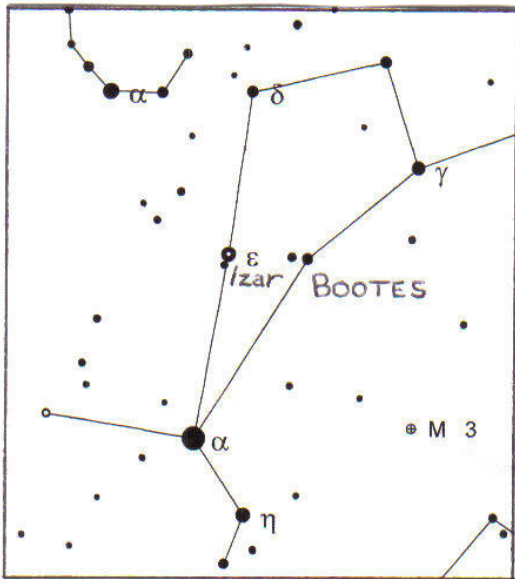


Chart for ϵ Bootis (Izar)
From *Cartes du Ciel*

Most of us are familiar with the novel *Moby Dick*, whose protagonist Captain Ahab relentlessly hunts a great white whale. I can sympathize with the obsessive Captain. For several years back in the late 1970s, I pursued an astronomical white whale—the double star epsilon (ϵ) Bootis. Instead of the

Izar (ϵ Bootis)

Pequod, my vessel of pursuit was a 3-inch f/10 reflector.

Trying to capture Izar with a 3-inch reflector is like attempting to harpoon a whale from a rowboat. The difficulty lies in the magnitude difference between the components (2.6 and 4.8) and their closeness (2.9 arc-seconds). On numerous evenings I tried to resolve Izar's component stars without success. Notching this stellar duo became an overpowering obsession. On the evening when I at last split Izar, skies were remarkably steady and I used the highest practical magnification (120X) my little reflector could handle. Even then, the companion played hide-and-seek in the diffraction ring of the primary.

A larger telescope and magnifying power of 200X will readily split Izar and reveal a striking color contrast between the golden yellow primary and its bluish companion. The Russian astronomer Wilhelm Struve, who conducted a double star survey in the late 1820s and early 1830s (Izar

Glenn Chaple's Sky Object of the Month

became Σ 1877 in his double star catalog, nick-named it "Pulcherrima" (The Most Beautiful).

But Izar is more than just a close pair of stellar specks. The main component is a K0 spectral class giant 30 times as large as the sun. Its A2-type companion is twice the sun's size—a virtual twin to Sirius. Separated by 180 Astronomical Units, the two undergo a slow gravitational dance, their orbital cycle encompassing perhaps a thousand years.

Imagine that Izar were moved from its current location 250 light-years away to a distance equal to that separating us from Sirius. The star would be a dazzling sight, rivaling Venus in brilliance. Viewed with even the smallest telescopes, the magnitude -3.6 and -1.4 components, separated by 85 arc-seconds, would be an absolutely magnificent sight.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com

Ancient Supernova Riddle, Solved

Ancient Supernova Riddle, Solved
By Dr. Tony Phillips

Australopithecus squinted at the blue African sky. He had never seen a star in broad daylight before, but he could see one today. Was it dangerous? He stared for a long time, puzzled, but nothing happened, and after a while he strode across the savanna unconcerned.

Millions of years later, we know better.

That star was a supernova, one of many that exploded in our corner of the Milky Way around the Pliocene era of pre-humans. Australopithecus left no records; we know the explosions happened because their debris is still around. The solar system and everything else within about 300 light-years is surrounded by supernova exhaust—a haze of million-degree gas that permeates all of local space.

Supernovas are dangerous things, and when one appears in the daytime sky, it is cause for alarm. How did Earth survive? Modern astronomers believe the blasts were too far away (albeit not by much) to zap our planet with lethal amounts of radiation.

Also, the Sun's magnetic field has done a good job holding the hot gas at bay. In other words, we lucked out.

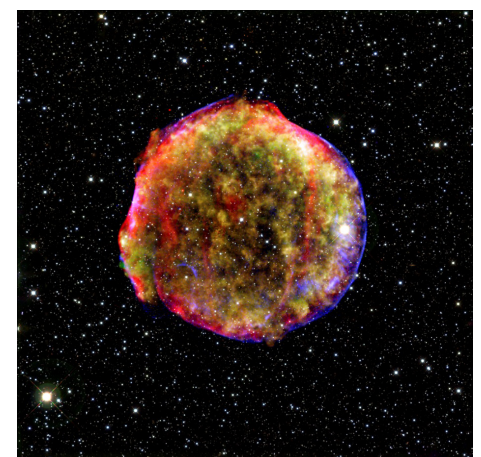
The debris from those old explosions has the compelling power of a train wreck; astronomers have trouble tearing their eyes away. Over the years, they've thoroughly surveyed the wreckage and therein found a mystery—clouds of hydrogen and helium apparently too fragile to have survived the blasts. One of them, whimsically called "the Local Fluff," is on the doorstep of the solar system.

"The observed temperature and density of the Fluff do not provide enough pressure to resist the crushing action of the hot supernova gas around it," says astronomer Merav Opher of George Mason University. "It makes us wonder, how can such a cloud exist?"

NASA's Voyager spacecraft may have found the answer.

NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of Pluto and on the verge of entering interstel-

lar space. "The Voyagers are not actually inside the Local Fluff," explains Opher. "But they are getting close and can sense what the



Left-over cloud from the Tycho supernova, witnessed by Tycho Brahe and other astronomers over 400 years ago. This image combines infrared light captured by the Spitzer Space Telescope with x-rays captured by the Chandra X-ray Observatory, plus visible light from the Calar Alto Observatory in Spain.

cloud is like as they approach it.”

And the answer is ...

“Magnetism,” says Opher. “Voyager data show that the Fluff is strongly magnetized with a field strength between 4 and 5 micro-gauss. This magnetic field can provide the pressure required to resist destruction.”

If fluffy clouds of hydrogen can survive a supernova blast, maybe it's not so surprising that we did, too. “Indeed, this is helping us

understand how supernovas interact with their environment—and how destructive the blasts actually are,” says Opher.

Maybe Australopithecus was on to something after all.

Opher's original research describing Voyager's discovery of the magnetic field in the Local Fluff may be found in *Nature*, 462, 1036-1038 (24 December 2009). The Space Place has a new Amazing Fact page

about the Voyagers' Golden Records, with sample images and sounds of Earth. Just in case one of the Voyager's ever meets up with ET, we will want to introduce ourselves. Visit <http://spaceplace.nasa.gov/en/kids/voyager>.

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

May Reports

Jim Crawford, *Secretary*
Lloyd Merrill, *Treasurer*

MAY MEETING

FRIDAY, MAY 7, 2010

SEAGRAVE OBSERVATORY

Bob Horton welcomed all members.

SPEAKER: Was John Kocur, discussing his experiences using a Canon XSi 12 meg DSLR camera for Astrophotography.

SECRETARY'S REPORT: April report accepted by membership.

FINANCIAL REPORT: April report submitted with no corrections

1st VP: Bob Napier speaker for June meeting will be Mr. John Briggs discussing his Astronomy experiments in Antarctica.

2nd VP: Steve Hubbard announced that our featured speaker for AstroAssembly Oct 2nd is Mr. Bob Berman from Sky & Tel. Another scheduled speaker is Mr. Stan Kozikowski who is on Super Nova patrol in New Hampshire. Topics are TBD along with the search for additional speakers.

HISTORIAN: Dave Huestis reminded all members that we still have more commemorative postal cache for \$3.00 ea which includes the stamp with Frank Seagrave on it.

LIBRARIAN: Bruce Merrill received DVDs from Jim Crawford of March and April's featured speakers. Bruce also announced that he received his letter of appointment to West Point. Bob Horton expressed Skyscrapers appreciation to Bruce for his year as Librarian and wished him success in his appointment.

STAR PARTY COORDINATOR: Bob Forgiel reported that the Christian Home Educators visited Seagrave last weekend with the Woman's World scheduled for tomorrow night, Saturday the 8th.



TRUSTEE REPORT: Tom Barbish reported that all the locks, deadbolts and keys were changed throughout the facility. If anyone would like to be a member of the Observatory Committee, keys will be provided. Members are reminded that if you join the Committee, you're required to participate in scheduled events and volunteer to help out with Public Nights even if it's just for security or to assist with set up etc. Tom also said we have several scopes are available for sign out by members.

OLD BUSINESS: A new member, Penny Lesperance and her family, was voted into the organization. Welcome Penny and we are looking forward to seeing you at future meetings.

NEW BUSINESS: Glenn Jackson made the following motions: (1) Donate \$50.00 annually to maintain Skyscrapers Clear Sky Chart. (2) Donate \$110.00 to support the Stellafane Flanders Pavilion. “Messier Club” members will be acknowledged in a permanent display with the \$110.00 donation. (3) Donate \$50.00 for a one foot square paver with the Skyscrapers name inscribed and custom molded. The paver will be set in place to make up the floor of the Pavilion. The motions were seconded and a final vote will be taken at the June meeting.

GOOD OF THE ORGANIZATION: Bob Horton reminded all members that the June meeting of Skyscrapers will be held at the Frosty Drew Observatory in Charlestown, RI. Bob asked volunteers to bring their scopes. Mirror making classes will be held at Ladd Observatory May 8th. Al Hall reminded members that StarConn will be on June 5th at Wesleyan University in Middletown CT. Bob Napier attended the

financial meeting of the Town of Scituate where they passed the motion to shut down approximately 50% of outside city street lighting. Bob was also asked by the town engineer to help draft an ordinance on controlling residential sign lighting. Bob is attempting to get the state to reduce highway lighting too. Any light reduction will greatly improve viewing at Seagrave Observatory. Bob also reported that the Scituate town zoning board rejected the construction of a wind turbine a few miles from Seagrave. The wind turbine could possibly restrict viewing from the observatory. Steve Hubbard asked all members to express their appreciation to the Trustees for making Seagrave grounds look so good. Much work goes into the buildings and grounds.

Bob Horton: As outgoing President, expressed his thanks and gratitude to outgoing and incoming officers, the trustees, volunteers and the membership in general for everything they have done to make Skyscrapers what it is today. Bob officially turned over the Skyscrapers Presidency to our new President, Mr. Tom Thibault. Tom also thanked all the outgoing officers for their dedication to the organization.

Business Meeting Adjourned at 9:30pm

Cash Flow (End of FY)

4/1/2009- 5/7/2010

INFLOWS

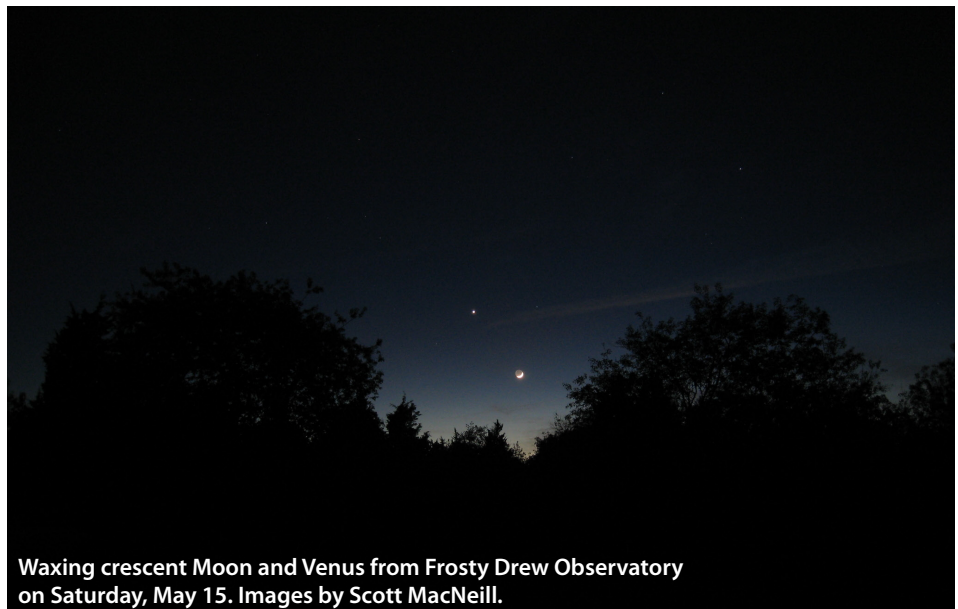
Uncategorized	0.00
75th Yr T-Shirt Sales	120.00
Astroincome	
Astro-banquet	1,054.00
Astro-Donation	75.00
Astro-grille	313.00
Astro-affle	599.00
Astro-registration	1,326.00
TOTAL Astroincome	3,367.00
Bookincome	
75th Anniversary Book 2nd Print	65.00
TOTAL Bookincome	65.00
Cookoutinc	
Other Cookoutinc	445.33
TOTAL Cookoutinc	445.33
Donation	
Other Donation	216.10
TOTAL Donation	216.10
Dues	
Contributing	423.05
Family	1,450.00
Junior	20.00
Regular	3,040.00
Senior	570.00
TOTAL Dues	5,503.05
Interest Inc	192.13
Magincome	
Astronomymaginc	442.00
Skytelmagincome	630.05
TOTAL Magincome	1,072.05
Magsales (Library)	19.00
Starparty	376.00
TOTAL INFLOWS	11,375.66

OUTFLOWS

Astroexp	
Astro food Fri-Sat	121.61
Astrocater	840.00
Astrogrille	138.46
Astromisc	27.79
Astrorestroom	175.00
Astrosupplies	51.36
Astrowine-cheese	135.39
Speaker Fee	500.00
Other Astroexp	585.00
TOTAL Astroexp	2,574.61
Cash	0.00
Cookoutexp	403.02
Corporationfee	22.00
Insurance	
Other Insurance	2,424.00
TOTAL Insurance	2,424.00
membersubscriptions	
Astronomymagexp	442.00
Skytelexp	626.05
TOTAL membersubscriptions	1,068.05
Miscellaneous, Bus	11.49
Postage and Delivery	31.24
Presidents Fund	25.00
Refreshment Expense	221.31
Trusteexp	3,918.61
Utilities	
Electric	141.19
Propane	37.35
TOTAL Utilities	178.54
Website Domain	34.99
TOTAL OUTFLOWS	10,912.86
OVERALL TOTAL	462.80

Banking Accounts

Citizens Bank Checking as of 5/6/10	3,568.23
Capital One as of 3/31/10	16,355.98
	19,924.21



Waxing crescent Moon and Venus from Frosty Drew Observatory on Saturday, May 15. Images by Scott MacNeill.



Waxing crescent Moon and Venus from Frosty Drew Observatory on Saturday, May 15. Images by Scott MacNeill.

Directions to Seagrave Memorial Observatory

From the Providence area:

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:

Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.



47 Peeptoad Road
North Scituate, Rhode Island 02857