

# The Skyscraper

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The monthly publication of



Amateur Astronomical Society  
of Rhode Island

47 PeepToad Road  
North Scituate, RI 02857

www.theskyscrapers.org

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See back page for directions to  
Seagrave Observatory.

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Please submit items for the newsletter  
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Sunflower Circle, North Providence, RI  
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# The Skyscraper

September 2006

## September Meeting: Member Presentations

FRIDAY, SEPTEMBER 1ST, 7:30PM AT SEAGRAVE OBSERVATORY

John Kocur "Setting Up a New Telescope"

Bob Horton "Astrophotography"

Rick Lynch "Roswell Revisited"

Gerry Dyck Astronomy Set to Music."

## Our Solar System of Eight Planets

Jim Hendrickson

On August 24, 2006, the General Assembly of the International Astronomical Union in Prague voted to change the formal definition of "planet" in such a way that excludes Pluto from being what are now the eight "classical" planets. Not since 1930, the year of the discovery of Pluto, has the number of planets in our solar system changed.

Under the new definition, Pluto is now classified as a dwarf planet, one of three categories that all sun-orbiting object fall into along with classical planets and small solar system bodies.

The debate of whether Pluto should be classified as a planet has been ongoing for several years because the previous definition was

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## SEPTEMBER 2006

1

FRIDAY

7:30PM **September Meeting**  
Seagrave Observatory

2

SATURDAY

8:30PM **Public Observing Night**  
Seagrave Observatory,  
weather permitting

9

SATURDAY

8:30PM **Public Observing Night**  
Seagrave Observatory,  
weather permitting

16

SATURDAY

8:30PM **Public Observing Night**  
Seagrave Observatory,  
weather permitting

23

SATURDAY

8:30PM **Public Observing Night**  
Seagrave Observatory,  
weather permitting

29

FRIDAY

6:30PM **AstroAssembly Friday  
Night Talks**  
Seagrave Observatory

30

SATURDAY

ALL DAY **AstroAssembly 2006**  
Seagrave Observatory

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## President's Message

Dave Huestis, President

Many thanks to our August speaker, Dr. Ron Remillard, for his excellent talk about black holes.

A special thank you to Nichole Mechnig for taking the minutes at the August 4th meeting in the absence of our secretary Mercedes Rivero-Hudec.

And a special thanks to Glenn Jackson for taking the minutes at the August 9th executive board meeting.

Last call for delinquent dues. If you haven't paid your dues for the current fiscal year beginning April 2006 by the September monthly meeting, you will be dropped from the membership list. Please don't let your membership lapse. See treasurer Al Schenck at the

September meeting or mail in your check and renewal form.

Ted Ferneza will be bringing the membership up-to-date on the upcoming AstroAssembly convention. AstroAssembly is our main event of the year. Ted will be looking for a few more volunteers to insure the success of this event. Please sign up for a task. Your help will make a difference. Don't forget, this year AstroAssembly is on September 29 & 30.

Our September program will feature some of our own members. Scheduled to give short talks are: John Kocur, Bob Horton, Rick Lynch and Gerry Dyck.

Following the talk we will break for coffee and pastry and then hold our business meeting.

See you at the September monthly meeting.

## NASA's Space Place

## Deadly Planets

By Patrick L. Barry and Dr. Tony Phillips

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At

first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

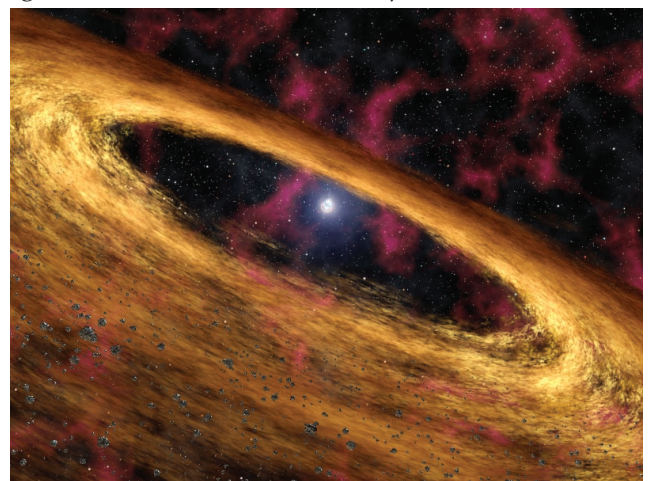
As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty?

Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at <http://www.spitzer.caltech.edu/>. In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to <http://spaceplace.nasa.gov/en/kids/live/> for a great place to introduce kids to infrared and the joys of astronomy.

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



Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

# HOW I BECAME AN AMATEUR ASTRONOMER

*Jerry R Jeffrey*

I became interested in things scientific when I was about eight or nine years old. I read just about everything I could find dealing with science but especially things having to do with space travel. *Coronet*, *Colliers*, *Mechanix Illustrated*, and absolutely anything with Chesley Bonestell's stuff in it was my forte. It's a real shame I didn't keep the stuff I collected when I was a kid, but so is life. I loved science but was terrible at math so it looked like my interest in science was going to be short lived, that is until October 1957 when the USSR launched Sputnik.

## The Little Blue Book that Changed My Life

When Sputnik was launched I was taking business math just so I could graduate from high school with minimum hopes of going to college. I was reading a little blue book by Arthur C. Clarke titled *Interplanetary Flight*. I did alright until I got to the mathematical appendices. I couldn't understand them, not even close. So I took the book to my math teacher and asked him about understanding these appendices in order to try to understand what the USSR had just done. He said I had to learn high level (2d year) algebra, trigonometry, and calculus before I could understand the book. He gave me a chance to learn these things by letting me sit in the back of his class and work through the 2d year algebra book and trigonometry book with after class help from him. He said all I had to do was get passing grades on his tests and get through the algebra book and he would give me an A in his class and recommend me a place at West Virginia State College. I went through both the algebra book and a trigonometry book before graduating from high school the following spring. I never looked back.

My interest in space led me to finish very close to the top of my college class with high averages in math and physics my dual majors. From there I went into the Army because I had a commitment from ROTC, which had paid for most of my education. The Army sent me to missile science school and I became a real rocket scientist but only used the knowledge to command a medium range ballistic missile unit. But even with all this background I never really was able to translate my desires to be involved with space until I retired from the working world.

On many vacations over the past 45 years or so I have tried to visit some astronomical site including



Jerry and Charlotte Jeffrey at The Artists Palette in Death Valley during the 2004 White Mountain trip..

MacDonald Observatory in Texas and Kilauea in Hawaii as well as many others. But I never really had the time during my working career to become involved with astronomy per se until I retired.

As a retirement present my wife and daughter bought me an eight inch Celestron. My wife and I had decided to move to RI, into a township that doesn't have streetlights beyond the township seat. This move was so we could be close to our grandchildren. My daughter told me that there was an observatory on PeepToad Road and since I was so interested I should contact them. One day just before we moved into our house in Gloucester we were driving by the observatory and saw a car there, so we stopped. My first contact with a RI astronomer was Ted Ferneza.

I must admit that my real interest in keeping with my education is astrophysics and astrodynamics, which I continue to expand. In order to understand more of this subject and astronomy I have spent considerable time teaching myself spherical trigonometry and all could about the in and outs of using telescopes. My home is littered with books by Hawking, Sagan, and many others who have dealt with both astronomy and astrophysics.

And as they say the rest is history, but the history just recounted would not have happened had it not been for that little blue book, which I still have.

# Impactors and Their Possible Explosive Effects on the Earth

## ARTICLE 1: INTRODUCTION, SPEED, AND DIRECTION

*Jerry R Jeffrey*

This article is the first in a series of three articles addressing some of the facts and suppositions surrounding Earth impactors and their effects. This article will address the basic scientific facts about the speed and direction (i.e., the velocity) of large objects colliding at high speed with the Earth. The second article will address the composition of impactors and the third article will describe a couple of hypothetical examples. Given time and the availability of space in our newsletter over the months following the publication of these articles I plan to periodically summarize the use of impactors as implements of death and destruction by accident or design in the cinematic and written literature.

### SPEED AND DIRECTION (I.E., VELOCITY)

Human civilization on Earth and possibly the Earth itself will be destroyed by fire next time [1] or so our scientists, theologians, and fiction writers would have us believe. This may occur in several ways many of which may well be related. I will, however, discuss only the possibilities surrounding an impact from space and its direct results.

So, how do scientists, fiction writers, and movies moguls come up with the numbers surrounding their chosen impact disaster? The numbers we see and hear fall into several categories: The inherent speed of the impactor, the innate speed of the earth, and the speed imbued by the mutual attraction between the Earth and the impactor. The summation of these various speeds along the line of motion of the impactor converts these speeds to an effective velocity and hence the violence of the impact. The direction effects depend on the orbital parameters of the incoming object relative to the Earth, i.e., is it prograde or retrograde (i.e., moving counterclockwise or clockwise, respectively) and the angle at which the object is going to enter our atmosphere and possibly hit the Earth's surface, among others. Besides the above speed and directional parameters of the colliding bodies the destructiveness of impacts also depends on the composition of the impactor (i.e., is it made of ices, stone, metal, or some combination thereof). As you can see this is a pretty complex subject and besides the length of the articles is one of the reasons I choose to present this subject in three articles instead of one.

I will keep the arithmetic as simple as possible, but some will be required. The first of these math problems will be to determine how fast the Earth is going around the sun in its orbit. The Earth's orbit is nearly a circle around the Sun with its center at

the center of the Sun some 149,500,000 kilometers [2] away (about 92,900,000 million miles or one astronomical unit). So given the fact that the Earth's revolution about the Sun takes about 365.26 days we may readily compute its speed in this assumed nearly circular orbit as: The Earth's orbital circumference divided by the hours in a year or  $2\pi r / (365.26 \times 24)$  or in kilometers  $(2 \times 3.14159 \times 149,500,000) / (365.26 \times 24)$  or roughly 107,154 km/hr (66,582 mph). In other words the Earth is moving at one hefty speed and hitting any large object, even one standing dead still would make a big splash.

However, the objects that we may hit (or that may hit us) are not standing dead still. These objects are in fact moving at quite some speed of their own relative to the Earth. They are usually headed for or returning from a pass around the Sun (perihelion) where the impactor's speed may be as much as 600 km/sec if it approaches the Sun closely enough. In addition to the speed of the Earth and the gravitationally generated speed acquired from the Sun an object falling from sufficiently far away, starting at zero speed, on a collision course with an object such as the Earth or the Sun will acquire the escape velocity of the body it is going to hit. The Earth's escape velocity from its surface is 11.2 km/sec [3] (6.955 mps) and the Sun's escape velocity from its surface is 618 km/sec [4] (384.09 mps). So, as the impactor falls past Earth's orbit it has acquired a respectable percentage of the Sun's escape velocity, roughly 42 km/sec, because it is falling toward the sun (or is returning from a near encounter with the Sun) [4]. If the object falls directly into the Earth causing all these speeds to be additive, which isn't very likely as we shall see in a few paragraphs, it would hit the Earth with a relative speed (all values are rounded off) at the surface of about 298,000 km/

hr [107,000 km/hr (earth's orbital speed) + 40,000 km/hr (Earth's gravitationally imparted speed) + 151,000 km/hr (the Sun's gravitationally imparted speed)]. So this thing could have an effective velocity of close to 300,000 km/hr (186,000 mph) when it hits Earth's surface if everything is absolutely right, or wrong, depending on your perspective.

But things are not always as they seem. To achieve the above maximum speed the object must be moving in a retrograde motion (i.e., clockwise with respect to the Sun). Note that all the Sun's planets including Earth and the asteroid belt minor planets move in a prograde direction (i.e., counterclockwise around the Sun when viewed from above the Sun's North pole). In addition our impactor must be moving in the ecliptic (i.e., dead flat with respect to the Earth's orbit) in order to gain the maximum impact speed. Lastly, the impactor's trajectory must ensure full effect of the Earth's gravitational attraction.

Almost all these factors will be reduced from their maximum potential due exclusively to the

improbability of all of them occurring at the same time. In other words it's possible to maximize the velocity but it isn't likely. For example, few of the short period Earth crossers move in retrograde fashion [5, page 96], Halley's Comet being a famous exception [6, page 186]. If the object is short period (i.e., with an orbital period of less than 200 years) it would probably hit the earth at some other angle than head-on. If the object is prograde then it would have to play catch-up and a very large percentage of its maximum possible impact speed would be lost.

Long period Earth orbit crossers, however, generally come from outside the orbit of the gas giants and could arrive from any direction [5, pages 198-199], even straight down on the North or South Pole. But, before I move on to calculation of the impact results themselves I need to talk about one more factor, the composition of the impacting body and its contribution to the object's kinetic energy. The discussion of composition and kinetic energy is the subject of next month's article.

## August Meeting Notes

Nicole Mechnig, Acting Secretary



Photo by John Kocur

### Featured speaker:

**Dr. Ron Remillard**, a Woonsocket native, gave an interesting and in-depth presentation on gaining insight into the nature of stellar black holes by measuring the innermost disk of matter swirling into them from their

binary companions.

### Business meeting

#### Call to order:

- The business meeting was called to order by David Huestis at 9:40 p.m.
- President Huestis welcomed a guest and prospective new member Anthony Salotto.

#### Secretary's report:

- Accepted as published in the Skyscraper.

#### Treasurer's report:

- Accepted as published in the Skyscraper.
- 75 paid members
- Bobby Napier and Ted Ferneza

have audited the books - missing much info from past treasurer - current treasurer has worked hard to reconcile to the bank statements available.

- Al might need to question members subscriptions and dues of checks that have not been cashed, so please cooperate with him

#### Trustees report:

- We have received bids for pest control. The trustees will reach a decision on who to contract.
- Painting and staining of the roll-off roof observatories is scheduled for Saturday, August 12, at 9:00. Volunteers requested to help.
- When emailing the Trustees, please include all three Trustees email addresses.
- Volunteers/keyholders needed for Saturday public open nights.
- Tree and brush cutting has been accomplished.
- Training is scheduled again for the scopes. See Marian Juskuv.
- Caution - gate was left open last week.
- The Porta-john has been secured. Keys are in all the buildings. For member use

only.

- Trustees will be responsible to maintain supplies for the Porta-john

#### 1st Vp Glenn Jackson - upcoming programs:

- Our September program will be a members' night: John Kocur, Bob Horton, Rick Lynch and Gerry Dyck.
- The following months are the same as was published in the July Skyscraper

#### Librarian- Tracey Haley:

- Over 25 astronomy books have been donated by Dr. Harold Snyder - they will be cataloged and incorporated into the library.
- Many books have been returned that were on loan.
- Please return borrowed books in a reasonable time - next monthly meeting or approximately one month.

#### AstroAssembly Update- Ted Ferneza:

- Ted not present, but he is still working on Astro Assembly. About 30 people have already pre-registered.

#### Old Business:

• Verna Gauthier was elected into membership. Congratulations Verna. • Constitution and bylaws amendment proposal: Bob Horton, appointed by President Dave Huestis to chair the task, explained the reason for the changes. A committee met for about 12 weeks to decide what changes to make. Many of the changes were simply a "codification" of how Skyscrapers traditionally conducted business. Many decisions and votes cast by the membership for rules, etc., years ago had never been incorporated into the Constitution and Bylaws (C&B). Bob read each proposed change (see the July Skyscraper for the proposed amendments.) The motion on the table was to accept the changes as proposed and approved by the Executive Board. Marian Juskuv had some issues with the proposed changes. He felt there was a problem with officers, not the Constitution and Bylaws. Marian noted several instances where he felt there was redundancy between the C&B and Robert's Rules of Order. Others present asked why that was a problem, it was noted that our C&B supersedes Robert's Rules. We simply wanted

to establish some specific job description for each of the officers, especially where none existed in our C&B before. He also did not like the idea of the treasurer's report being published online. Marian also suggested striking some proposed clauses as well as objecting to word usage. Before the vote was taken, the question was asked if we had a quorum, since some members had left after the speaker's presentation. Yes, a quorum is 12 Senior & Contributing members, which includes Regular, Family, Contributing and Senior (65+). That criterion was met. The vote was taken: 20 members voting: 19 for and 1 against. Two-thirds (66.6%) required for passage. 95% obtained. Motion to accept the C&B amendments passed.

#### **New Business:**

• Anthony Salotto was introduced to the membership. He will be voted on under Old Business at the September monthly meeting.

#### **For the Good of the Organization:**

• Bobby Napier expressed his understanding of the standing rules of the organization. • Dave Huestis reported that he was unable to reschedule the Whittin Observatory

field trip before the school year started at Wellesley College. Will try for the spring of 2007

#### **Presidential Announcements:**

• A local RI amateur astronomer, Jim Massarone, is looking for a 14" mirror. Has not been successful. Asking for help. Members suggested Astro Mart. • Skyscrapers have been invited to and have decided to participate in the Scituate Library Centennial on August 26, from 10:00 am to about 5:00 pm. We will have a table for displaying info about Skyscrapers, Seagrave and astronomy in general, plus we will be providing solar observing with several instruments. If you haven't signed up to help, please email me at dhuestis@aol.com. • Dues were payable in April. Please renew. • Our next monthly meeting will be on September 1, 2006. • Executive Board meeting next Wednesday, August 9, at 7:30 pm at Seagrave. • Meeting adjourned at approximately 11:00 pm.

*Minutes taken by Nichole Mechnig in the absence of the secretary and compiled for publication by Dave Huestis.*

## **Executive Committee Meeting**

*Glenn Jackson, Acting Secretary*

August 9, 2006 - Seagrave Memorial Observatory

President Dave Huestis called the meeting to order at 7:30 pm.

**AstroAssembly:** Second Vice President Ted Ferneza presented a thorough update on the plans for Astro Assembly (Sept. 29-30). Key-note speaker for the evening and two speakers for Saturday afternoon have been confirmed. Ted is looking for a 3rd speaker for the Saturday afternoon program. He has contacted the Harvard Smithsonian speaker bureau for assistance. No expense has been incurred so far in procuring these speakers for our event.

Ted is looking for speakers for the Friday night program. Gerry Dyck has agreed to be a presenter. Raffle prizes are coming in. Ted asked that members consider donating a new or like-new item for the raffle. Last year Jim Brenek donated a telescope and it generated the most action among the raffle prizes. The Quick Stop caterer is all set for the banquet. Franks rental tents was going to be \$60 higher this year for the tent rental, but Ted convinced him to rent it at last year's rate. Ted to request the use of Jack Szelka's tent once again. We have reserved the local golf cart shuttle again for

this year.

The church rental has been confirmed. Ted will coordinate with the Siok's the purchase of the wine and cheese for the Saturday night reception before the banquet. Ted agreed to print the Astro Assembly program this year. Scott Tracey has agreed to be Master of Ceremonies again this year. Spouses can attend and pay for just the banquet without paying the registration fee. Our new porta-john will be cleaned prior to the event. It was decided to rent an additional porta-john, and both johns will be set up in the parking lot as usual. The Friday night pro-

gram will be preceded by coffee 'an beginning at 6:30 pm. 26 people have registered as of this date.

**Trustees:** The ceiling tiles in the anteroom need to be replaced due to squirrel damage. The money had already been included as part of the Trustees budget. They will make every effort to minimize the expense. A work session is planned for Saturday August 12 to paint/stain the buildings. A discussion followed concerning pest control (carpenter ants and termites.) It was decided that we would contract with a local company called Debug for one-year, providing Tracey Haley's confirmation of the services to be provided. Cost would be \$250 for the 1st visit, and \$85 every three months. Our treasurer Al Schenck endorsed this company. Five new folks were trained on the Meade 12-inch on Saturday, August 5. The Observatory Committee has still not met. Bob Horton and/or Bobby Napier will be asked to clean the Meade 12" and 16" corrector plates. Paul Valeli will be re-scheduled to clean the Clark objective in the late spring or early summer next year. Marian did an inventory of the items in the Trustees cabinet. Old and unused equipment will be collected and a decision will be made as to its value and possible disposition.

**Treasurer:** Al Schenck had no news to report other than what was printed in the Skyscraper. He received a list of subscribers form both S&T and Astronomy. He will

review to make sure all is accurate. Al noted we had had a credit with the Electric company, so a recent bill was only less than \$1.00. President Dave Huestis praised Al's hard work in putting our books in order. Those present gave Al a well deserved round of applause. Ted Ferneza and Bobby Horton will review Al's reconciliation soon.

**Secretary:** Mercedes has begun to maintain the Skyscraper member database. As of 8/04/2006 we had 85 members. President Dave Huestis has sent personalized notes to members reminding them that dues were payable in April. As of 8/09/2006, 5 more have responded to the reminder and promise to renew asap. Additional reminders are to go out soon.

**Scituate Library Centennial:** August 26, 2006; Skyscrapers will participate in this event to be held in the village near the Library and the Community Center. We will have a table with info about Skyscrapers, we are planning a powerpoint presentation, h-alpha and white light solar observing, and a poster-board with images of our telescopes, but also some diagrams showing how they work (collect light, etc). We will also promote observing back at Seagrave for that evening. We will need at least one of our big tables and a few battery power supplies. The Library is supplying the tent. The event is from 10:00 am to 9:00 pm. Our presence will be from 10:00 to 5:00 pm. Please contact Dave

Huestis by email (dhuestis@aol.com) if you wish to help. We will set up at 8:30 am in the area behind the parking lot in front of the Community Center (I will be there early to check in with the organizers in case our assigned area has changed.)

Proposal to use our facility as a communications center base of operations during a state emergency (hurricane specifically.) Marian Juskuv made this proposal on behalf of the Salvation Army. Folks from several agencies would converge to use ham radios for communication. Antennas, tents, generators computers, etc. They could "occupy" the site for several days. Marian could have someone from the Salvation Army talk to the group about more of the details. This is only a preliminary inquiry. Marian asked those present to think about it. Some discussion took place. Liability was a main concern. Dave Huestis agreed to check with our insurance company and report back to the Trustees and the Executive Board. The Trustees were asked to take the proposal under advisement.

The meeting was adjourned at 9:30 pm.

*The minutes of this meeting were taken by 1st VP Glenn Jackson in absence of the Secretary. Thank you Glenn. President Dave Huestis provided this report from those notes.*

## Our Solar System of Eight Planets

*continued from page 1*

too vague and the recent discovery of an object in the outer solar system clearly larger than Pluto raised questions of whether the object, 2003 UB313, should be the 10th planet. The rate of discovery of these outer solar system bodies has been accelerating since the first one was spotted in the early 1990's, making it increasingly likely that more will be found that are similar in size or larger than Pluto. Would these also be considered planets? And if they are, what makes them planets but objects just a bit smaller than them not planets?

And what about 1 Ceres, the largest of the main belt asteroids discovered over 2 centuries ago? It was clearly becoming more difficult to say what should be classified as a planet.

The vagueness of the definition of planet comes from the fact that in ancient times, a planet was simply a star that did not remain stationary in the sky with respect to the background stars. At the time there were only 5 planets, Mercury, Venus, Mars, Jupiter, and Saturn. These were the only "wandering stars" as the ancient

Greeks called them that were visible to the naked eye, as there were no telescopes to spot the remaining two. Earth itself wasn't considered a planet until the Copernican model of the solar system was devised in the 16th century.

By the time Uranus was discovered in the late 1700's it clearly fit the model of what a planet should be, by this time understood to be large spherical bodies orbiting the sun.

A bit of a conundrum arose at the opening of the 19th century, however, when an object was found orbiting the sun between Mars and Jupiter. At first this object, named Ceres, was considered to be a planet, but telescopic observations showed nothing more than a point of light, so it clearly did not appear to be like the other planets. It was then categorized as a new type of object known as an asteroid, meaning "starlike" due to its appearance in telescopes.

Neptune was discovered in the mid-19th century by mathematical prediction based on the perturbations observed in the orbit of Uranus. Neptune was undoubtedly a planet due to its appearance as a distant blue ball in a telescope.

After Neptune was discovered it was widely believed that there was still an undiscovered, large planet beyond the orbit of Neptune. The search for Planet X ensued.

It wasn't until 1930 when Clyde Tombaugh found a new planet by examining photographic plates he exposed using a telescope at Lowell Observatory. Named Pluto, this dim point of light which can only be detected visually in telescopes of about eight inches and larger was only detectable by noting the change in its position against the background stars over the course of 2 nights of observation. Once its orbit was calculated, it was determined that Pluto was a small object, quite unlike the larger planets of the outer solar system. It certainly wasn't the Planet X being searched for, but it was a

planet nonetheless. Many decades passed and no new planets were discovered, but many thousands of small solar system bodies were found. Since then the solar system has consisted of no more or no fewer than nine planets.

Today we have eight. So what are the consequences of "losing" a planet?

As it turns out, even though Pluto has been stripped of its planetary status, its discovery was significant in the fact that it was the first of a new class of solar system bodies and it would be more than six decades before the next one was found. These are the objects that we know today as the Kuiper belt, or trans-Neptunian objects. And among these Kuiper belt objects, Pluto holds more prominence than it ever did as a planet, being the second largest one discovered to date and also being comparatively close to the sun.

For decades its ephemeris has been published in books and journals so that backyard astronomers could track its progress across the sky as it makes its 248 year orbit around the sun. With planetarium software and the web, it will always be possible to find Pluto at any given time.

Until recently, no interplanetary space probe had ever been sent to Pluto, making it the only planet to not have been explored up close by a robotic visitor from Earth. That changed in January 2006 when the New Horizons mission was sent on a journey to Pluto and points beyond; and until 2015 when we finally get our first up-close look at it, Pluto will remain the enigma at the edge of the solar system.

Planet or not, it is not likely that astronomers will lose interest in Pluto, and perhaps the biggest casualty of its reclassification is the old grade-school mnemonic used to remember the names and order of the planets: "My very educated mother just showed us nine planets."

## TREASURER'S REPORT

*Al Schenck, Treasurer*

### INFLOWS

astroincome	
astrobanquet	338
astroregistration	498
<hr/>	
TOTAL astroincome	836
cookoutinc	441
donation	71.57
Collationdonation	37
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TOTAL donation	108.57
dues	1,400.00
Contributing	761
Family	650
Senior	161
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TOTAL dues	2,972.00
Interest Inc	14.35
maginecome	
Astronomymaginc	165.95
skytelmaginecome	362.45
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TOTAL magincome	528.4
Starparty	350
<hr/>	
TOTAL INFLOWS	5,250.32

### OUTFLOWS

astroexp	18.61
Astroprinting	18.73
Hallrental	150
98145.45	5
Tentrental	500
<hr/>	
TOTAL astroexp	692.34
bldgandgrounds	90
clubsubscription	60
collation	98.02
Cookoutexp	503.13
Corporationfee	20
Discretionary	25
membersubscriptions	
Astronomymagexp	170
Skytelexp	428.35
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TOTAL membersubscriptions	598.35
Portajohn	100
Utilities	
Electric	61.06
Propane	49.86
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TOTAL Utilities	110.92
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TOTAL OUTFLOWS	2,297.76
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OVERALL TOTAL	2,952.56

### Bank Accounts

Checking	1,878.00
Savings	15,608.09
<hr/>	
TOTAL Bank Accounts	17,486.09
Cash Accounts	
Cash Account	53.86
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TOTAL Cash Accounts	53.86
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OVERALL TOTAL	17,539.95





SKYSCRAPERS INCORPORATED PRESENTS

# ASTROASSEMBLY 2006

Friday, September 29 & Saturday, September 30  
at Seagrave Memorial Observatory

Please join us on Friday September 29th and Saturday September 30th for this year's 54th annual Astro Assembly. Friday evening is given over to 4 or 5 informal talks from local amateurs and researchers. Saturday we will enjoy listening to nationally renowned leaders in Astronomy sciences. This year's key note speaker will be **Dr. Sidney Wolff**, former director of the National Optical Astronomy Observatories. Dr. Wolff played a lead role in the early history of Mauna Kea's observation development and was the first woman to head a major US observatory ( Kitt Peak ). Dr. Wolff has served as president of both the American Astronomical Society and the Astronomical Society of the Pacific. She received the AAS Education prize for 2006 for her outstanding contributions to astronomy education and science. She is currently serving as project scientist for the Large Synoptic Survey Telescope being built in Chile. **Dr. Steven Dubowsky**, Professor/Director of MIT's space robotics program will be with us to talk about a planned future planetary exploration program. **Dr. John Delano**, expert on exobiology and geochemistry at the University of Albany, will be on hand as well to discuss his role in NASA's work on the origin and distribution of life in the galaxy. Solar observing through a variety of instruments will be available all day Saturday. Roger Rivers from Rivers Camera and Telescope will be our primary vendor. Due to space constraints at our facility, attendance is limited. For that reason, we strongly recommend that you pre-register. Additionally, tickets for the banquet will not be sold at the door and can be pre-ordered for \$17.00. Our dinner banquet is an all you can eat buffet and has been very successful in past years.



#### BUFFET DINNER MENU

- Wine & Cheese Reception
- Fruit Tray
- Antipasto Salad
- Boneless Chicken & Gravy
- Swedish Meatballs
- Seafood Pasta
- Vegetables
- Rolls & Butter
- Pastry & Coffee

Serving - 6:30 PM  
Menu subject to change slightly



Name \_\_\_\_\_

Address \_\_\_\_\_

Email \_\_\_\_\_

Send completed form and check  
(made payable to Skyscrapers Inc.)  
to:

Ted Ferneza  
Astro Assembly Registrar  
55 Francis Street  
N. Scituate, R.I. 02857

_____	Registrations at \$17.00 each	Total	\$ _____
_____	Banquet tickets at \$17.00 each Banquet tickets must be pre-ordered. No tickets will be sold the day of the event.	Total	\$ _____
		<b>Total</b>	<b>\$ _____</b>

- I would like to give a short 20-minute talk on Friday evening:  
Indicate the title of your talk below. AstroAssembly registrar Ted Ferneza will contact you via email to confirm your talk.

\_\_\_\_\_

# 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, RI 02857