

# CONSTELLATION addendum . . .

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Scott Petersen, editor © BMAA 2016

## 2016 BMAA Picnic was a damp success

*- by Gary Sprague*

The 2016 picnic on Saturday, August 6 was almost a wash-out. Thunderstorms were passing through the area but managed to pass Lake Nockamixon around 4:00p. Dwight did his usual wonderful job with the dogs and burgers and we had delicious some sides. Ed R brought his corn casserole, or whatever he calls it, and we had some good salads and other snacks.



Chef Dwight at the grille.

- Picnic continued, next page -

– Picnic, continued -



Ed R demonstrated his sailing prowess with his (miniature) RC sailboat, even with hardly any wind.



Robert setting-up for the evening starwatch.

We had a good turnout of scopes but, alas, few visitors for viewing; likely scared away by the weather. We'll probably do the picnic again next year; come and join us if you missed this year. It's a good relaxing time with your fellow astronomy nerds.

– *BMAA co-president Gary Sprague provided this article and photos [-ed]*

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# Bucks-Mont Astronomical Association, Inc

## General Meeting Minutes August 2016

Location: Upper Dublin Lutheran Church, 411 Susquehanna Road, Ambler PA 19002  
Meeting called to order by Dwight Dulsky at 7:30p. In attendance: 21 members and guests  
Officers present: Gary Sprague and Dwight Dulsky (co-presidents), Lee Zager (vice-president),  
Ed Radomski (treasurer), Robert Mittel-Carey (secretary)

Dwight presented the following:

- Proposed website changes including: 2017 eclipse news, and add an “outreach” tab.
- Club has over 250 followers on Facebook
- Reviewed August calendar events
- Next Solar Interest Group (SIG) meets September 7<sup>th</sup> @ 7:00p
- Outreach activities at a STEM camp, Souderton Mennonite Community, and Frederick Living in Phoenixville
- Finished the “Astronomy 101” program at Wesley Assisting Living, follow-up starwatch TBD
- Possible involvement for Nockamixon Community Day on September 17<sup>th</sup>
- Centennial school district contacted club regarding a Meade 12” RC400 it has acquired

Igor shared photos of the following:

- BMAA members at the July 10<sup>th</sup> Nockamixon star watch
- The following Messier objects: M13, M51, M57
- Pluto along with a brief presentation on Pluto

BMAA member Dave Clark’s website, [www.nationaleclipse.com](http://www.nationaleclipse.com), was shared

Ed Radomski presented the Treasury report, and an update on required changes to several of BMAA’s financial accounts.

- **Main topic: Cost Effective & Affordable Ways of Building a Personal Observatory**

Steve DeMarco of the ChesMont Astronomical Society presented how he built a backyard observatory using mostly salvaged supplies.

Respectfully submitted,  
Robert Mittel-Carey, secretary

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### Editor's Note

The CONSTELLATION is your BMAA club newsletter and its success depends solely on your input. Please submit articles to me at: [constellation@bma2.org](mailto:constellation@bma2.org). I am trying to maintain a quarterly publication cycle, on or about the Solstices and Equinoxes with supplements as required. Thanks.

— *Scott Petersen, editor*

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## Is there a super-Earth in the Solar System out beyond Neptune?

- by *Ethan Siegel*

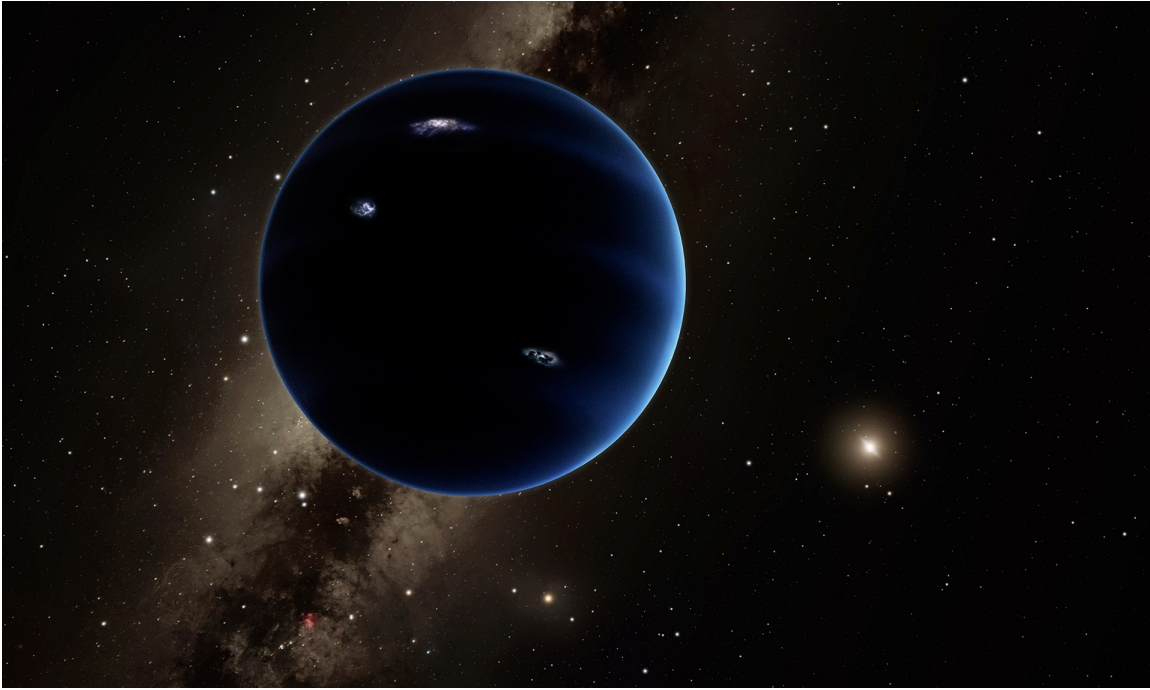
When the advent of large telescopes brought us the discoveries of Uranus and then Neptune, they also brought the great hope of a Solar System even richer in terms of large, massive worlds. While the asteroid belt and the Kuiper belt were each found to possess a large number of substantial icy-and-rocky worlds, none of them approached even Earth in size or mass, much less the true giant worlds. Meanwhile, all-sky infrared surveys, sensitive to red dwarfs, brown dwarfs and Jupiter-mass gas giants, were unable to detect anything new that was closer than Proxima Centauri. At the same time, Kepler taught us that super-Earths, planets between Earth and Neptune in size, were the galaxy's most common, despite our Solar System having none.

The discovery of Sedna in 2003 turned out to be even more groundbreaking than astronomers realized. Although many Trans-Neptunian Objects (TNOs) were discovered beginning in the 1990s, Sedna had properties all the others didn't. With an extremely eccentric orbit and an aphelion taking it farther from the Sun than any other world known at the time, it represented our first glimpse of the hypothetical Oort cloud: a spherical distribution of bodies ranging from hundreds to tens of thousands of A.U. from the Sun. Since the discovery of Sedna, five other long-period, very eccentric TNOs were found prior to 2016 as well. While you'd expect their orbital parameters to be randomly distributed if they occurred by chance, their orbital orientations with respect to the Sun are clustered extremely narrowly: with less than a 1-in-10,000 chance of such an effect appearing randomly.

Whenever we see a new phenomenon with a surprisingly non-random appearance, our scientific intuition calls out for a physical explanation. Astronomers Konstantin Batygin and Mike Brown provided a compelling possibility earlier this year: perhaps a massive perturbing body very distant from the Sun provided the gravitational "kick" to hurl these objects towards the Sun. A single addition to the Solar System would explain the orbits of all of these long-period TNOs, a planet about 10 times the mass of Earth approximately 200 A.U. from the Sun, referred to as **Planet Nine**. More Sedna-like TNOs with similarly aligned orbits are predicted, and since January of 2016, another was found, with its orbit aligning perfectly with these predictions.

- Space Place, continued -

Ten meter class telescopes like Keck and Subaru, plus NASA's NEOWISE mission, are currently searching for this hypothetical, massive world. If it exists, it invites the question of its origin: did it form along with our Solar System, or was it captured from another star's vicinity much more recently? Regardless, if Batygin and Brown are right and this object is real, our Solar System may contain a super-Earth after all.



*A possible super-Earth/mini-Neptune world hundreds of times more distant than Earth is from the Sun.  
Image credit: R. Hurt / Caltech (IPAC)*

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit **spaceplace.nasa.gov** to explore space and Earth science!

*- Space Place is provided to local astronomy clubs by NASA [-ed]*

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# BMAA Member Registration Form

☐ Renewal

☐ New Member

Name \_\_\_\_\_

\_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone

Home \_\_\_\_\_

Cell \_\_\_\_\_

E-Mail \_\_\_\_\_

Dues are **\$30.00** for an individual or **\$40.00** for a family membership (more than one person at same address).

Make check payable to **BMAA and send to:**

BMAA  
c/o Ed Radomski  
36 Far View Road  
Chalfont PA 18914

If you would prefer to register and pay using **PayPal** do not use this form. On the [PayPal](https://www.paypal.com) website send your payment to [treas@bma2.org](mailto:treas@bma2.org) . Send it as a "purchase of goods" so that I receive your address. In the Email section make the subject "Dues" include your telephone # and your preferred Email address in the message area.

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