

# WNY *engineer*

ISSUE 4

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## NEWS

# Past President Dinner - Success!



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## PRESIDENT'S MESSAGE



*I wish all  
a Merry  
Christmas  
and a great  
Holiday  
Season!*

As we continue our advancements in the engineering world, with new ideas that are brought on with innovation, research, and our own true grit; it is obvious that there were some great people in history that helped lead us in this direction. It is hard to imagine that we could have evolved to such great lengths, without historical advancements in both mathematics and physics.

December is a great month for The Engineering Society of Buffalo because of the holidays coming, the season of good will, and to reflect upon some of the incredible individual efforts made through the course of history.

Sir Isaac Newton (1643 - 1727), an English physicist and mathematician, is considered one of the greatest influential scientists of all time. One of Newton's famous quotes is "If I have seen further than others, it is by standing upon the shoulders of giants." Newton along with Gottfried Wilhelm Leibniz (1646-1716), a German polymath and philosopher, are credited with the initial development of what is now widely known as Calculus. Leonard Euler (1707 - 1783), a Swiss mathematician is considered the most prolific mathematician that ever lived. Euler was widely known for his ability to solve difficult calculus problems in his head, which served him well as he was blind for the last 17 years of his life.

Although these are only three of the incredible list of overachievers in the math and physics world, it is an uplifting feeling to see how history has brought these wonderful minds to work together toward such a noble cause, which acts as the basis of our engineering world. These individuals have challenged the hands of time, separation of distance in different countries, and certainly battled communication issues, to develop our math and science to the present levels of today.

Our own engineering disciplines are led by these great individuals, with their own undeniable efforts to succeed, their undying passion to advance, and the incredible legacy that they each leave us. Their passion, devotion, and commitment have paved the way for our own challenges, as well as our own successes.

As we all enjoy the holiday season, and are comforted with the companionship of our families and friends, and the excitement of a new year beginning; we should also reflect on how past accomplishments from determined individuals can continue to advance our own future. I believe that in time history books will also have great things to say about our past, present, and future ESB members.

Michael J Samol  
ESB President  
msamolacs@gmail.com

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## CALENDAR OF EVENTS

12-14-15	6pm	Ways and Means Meeting	2555 Walden Ave, Buffalo (Wendt Corp)
12-14-15	7pm	Directors Meeting	2555 Walden Ave, Buffalo (Wendt Corp)
12-22-15	630pm	ESB Car Show Meeting	Jack Devine's (Nia Falls Blvd & Ward)
12-28-15		Deadline for newsletter content	
01-11-16	6pm	Ways and Means Meeting	Possibly UB Newman Center
01-11-16	7pm	Directors Meeting	Possibly UB Newman Center
02-15-16 to 02-20-16		Pre-Engineer's Week Activities	Buffalo Museum of Science
04-12-16		ISA Tech Expo	Amherst
06-04-16		ESB Car Show	



## PREVIOUS BIG ESB EVENT

# Past President Dinner 2015

By Matthew J Plizga PE

On Thursday October 22nd, ESB celebrated our annual Past President Dinner at the historic Saturn Club of Buffalo. The club proved to be a fantastic fit for the event. Typically, the PPD gathers around 40-50 people. But this year was a more intimate affair.

The Saturn Club accommodated The Engineering Society of Buffalo exceptionally well. They changed rooms for us when the anticipated number of attendees was lower than originally expected. The club set us up in the Lounge and Loggia front room that overlooks Delaware Ave and the club entrance.

The Saturn Club was founded in 1885 by thirteen young men and designed by Saturn Club member Duane Lyman. The club is also designated a historic landmark and is on the national historic registry. Many of the guests commented on how beautiful and historic the club was. The club is currently finishing up a million dollar renovation to their slate roof including all new copper flashings and weatherproofing, in keeping with the club's historic look.

The evening started at 6pm in the Lounge and Loggia for a one hour cocktail reception and networking. The room has its own bar and gathering foyer filled with huge windows that allow ample amounts of natural light into the room. The evening was moderated by Robin M Closs SE PE who has done a fabulous



job as moderator for three recent PPD events.

After the cocktail hour, a sit down dinner service was started. Attendees got to choose from chicken, salmon and beef tenderloin, or vegetable napoleon.

Once dinner was finished, out-going president Marco Scofidio thanked everyone for doing a great job and for all the hard work of the board. Incoming president Mike Samol discussed the many great things that are happening in the society and how he is going to get the society's youth committee more involved with The University of Buffalo.

After the gavel plaque was presented to Marco, Richard Cartwright gave an engaging and informative presentation on "Engineering Career Development and Survival." The presentation was not only beneficial to the scholarship students in attendance but also to seasoned veterans of the engineering profession. He elaborated on career development for engineers, life skills, and affirmations. Mr. Cartwright engaged the audience from beginning to end, and was very animated and fun to watch.

The Engineering Society of Buffalo would like to thank the Saturn Club of Buffalo's staff for taking good care of its patrons for the evening. Thanks goes out to Emily Lock and Amy Wiech of the Saturn Club for their help in planning the event.

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## TECH ARTICLE

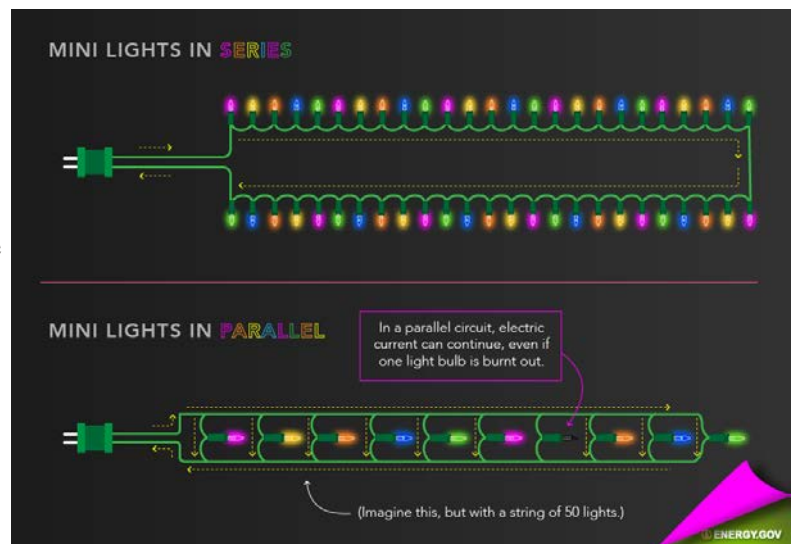
# How Holiday Lights Work

By Daniel Wood and Sarah Gerrity ([www.energy.gov](http://www.energy.gov))

While stringing up lights, I wanted to learn how exactly holiday lights work. Here's what I discovered. The primer below applies to incandescent light strands, which have been traditionally used to decorate our homes for the holidays and are a great way to learn about the flow of electric current. (LED holiday light strands are becoming more popular, due to being sturdier, lasting longer, and consuming 70 percent less energy than conventional incandescent light strands. It only costs \$0.27 to light a 6-foot tree for 12 hours a day for 40 days with LEDs compared to \$10 for incandescent lights.) But now, back to incandescents. To start off, we have to understand how an incandescent light bulb works. In a simple circuit, electricity travels through a closed circuit, passing over a filament, causing it to glow brightly. The more current that passes over a filament, the hotter it will get, the brighter it will burn, and quicker it will burn out. If the circuit is broken, or open, no electricity will pass over the filament and it will not light. If the current is too great, the filament will melt, or blow out, causing the circuit to become open. But, we want more than one light to shine on our Christmas tree or along the roofs of our homes. If you want to connect multiple light bulbs to the same power source, there are two ways to do that: either attach the lights in series or in parallel.

When lights are attached in series, the electricity passes from the power source to the first light, and then from light to light until it returns to the power source. In this setup, when a filament within any one bulb blows out, it creates an open circuit in the wiring. As we mentioned earlier, when a circuit is incomplete, or open, electricity fails to pass through any of the wire, causing all the lights to go out. When lights are attached in parallel, each light is on its own circuit to the power source. If one filament burns out, it has no effect on the remaining lights, as they each continue to be in a closed circuit with the power source.

With strings of holiday lights, engineers decided that the best option was to connect several series of lights together in parallel. In other words, holiday lights are both in series and in parallel. This way, when one series of bulbs becomes defective (say from a loose bulb) it should have no effect on any of the other series of bulbs, since they are in parallel to the defective series. This is why



sometimes only one portion of your lights will become defective, while others will remain functional. When additional strings of lights are attached to the end of a string, these lights are added in parallel to the original strand.

But what about when a bulb goes out in series? It used to be that when one bulb went out the entire series would go out. If this were the case, you would have to check each bulb individually to see which one was blown out. If multiple bulbs were blown out, this would become exceedingly difficult. Enter the "shunt." What is a shunt, you ask? I will tell you! A shunt is any device that allows current to continue flowing through a circuit by creating a path of lower resistance than the original path. In incandescent holiday lights, shunts are small wires wrapped beneath the filament. Initially, they are coated with a substance that makes them an insulator. In other words, electricity cannot pass across the shunt as long as the filament exists, because the coating gives the shunt a higher resistance initially than the filament, and the electrical current avoids the shunt in order to find the path of least resistance, through the filament. If the filament burns out, however, the high temperature from the burnout will cause the

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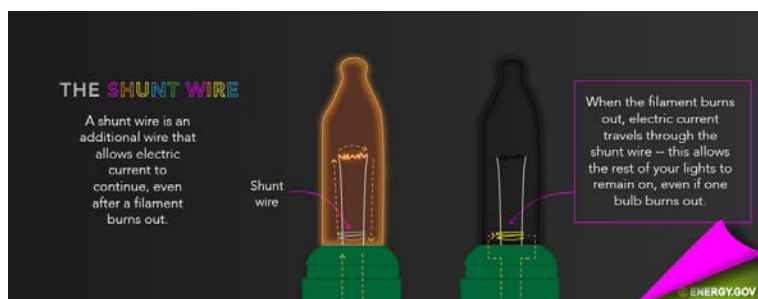
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## TECH ARTICLE

Continued from page 4



substance coating the shunt to melt off, revealing the lower resistance wire beneath. Now the shunt has gone from an insulator to a conductor, and current passes along the shunt, keeping the circuit closed, and the remaining lights burning.

The last thing to understand about how holiday lights work is the role of the fuse. Recently, as I was putting up lights, I tripped on a wire and the lights went out. The string of lights remained plugged in so I was stymied as to what happened. I unplugged, reconnected ... unplugged, reconnected the string. Nothing. Then it came to me. "The fuse!" I said under my breath. I must have caused some sort of short circuit when I jolted the wire. Fuses are important safety features for many electrical appliances, but most of us don't even know that they're there.

In holiday lights, the fuse can be found near the part of the strand that plugs into the wall, often called -- and I'm not making this up -- the male end of the wire. Normally, the fuse is accessible through a small plastic door in the plug that can be opened and closed for replacing the fuse. As the electrical current within a wire increases, the wire can heat up, at times causing melting or even fires. To prevent this, fuses were introduced as so-called "sacrificial devices" (so very selfless of them!) When the current increases past a safe level, instead of the wire melting or your Christmas tree catching fire, the fuse safely breaks the circuit, averting many disastrous scenarios. Fuses are typically small sections of replaceable wire, rated to a maximum current level. Because they are more delicate than the rest of the wiring, a fuse will burn out before overcurrent has an opportunity to overheat other portions of the light strand. When a fuse breaks, the circuit becomes incomplete and current cannot flow through the remainder of the circuit.

So now that we understand the mechanics of holiday lights, let's address some common problems we run into and how to remedy them.

If only one section of your lights become extinguished, this means that the circuit is open on that particular series. If this happens, there are a few things that could be going on. First off, you could simply have a loose bulb. This is a common problem, and the most easy to identify and fix, by simply screwing back in the bulb. Second, it could mean that one or more lights have blown out but that the shunt is defective, possibly from the insulating substance remaining intact. Finally, there could be something defective in the wiring, causing the series to become an open circuit. Unfortunately there's not a lot you can do if that's the case.

If only one light goes out, it almost certainly means that individual light is defective and needs to be replaced. This is the most common problem and the easiest to identify and fix. If this happens it is important to replace the bulbs quickly. When the filament of a bulb burns out and the shunt takes over, it has a lower resistance than the filament. As a result, each remaining bulb gets slightly brighter, burns a little hotter and burns out more quickly. As each bulb burns out, and the 120 volts from the power source is distributed to fewer and fewer bulbs, this process happens faster and faster. The last few bulbs will burn out very quickly. So it is best to replace burnt-out bulbs quickly when they go out.

If all of your lights go out, it is probably because you have too great a current coming from the power source and have blown a fuse. If, after replacing the fuse, fuses continue to blow, it could be because you have too many bulbs burned out or too many strands of lights connected to the same socket. This is called overloading a circuit. You could continue to replace fuses -- but a blown fuse is typically a sign that some issue is causing too great of a current to pass through the fuse. Disconnecting one of the strands of lights could solve the problem. It is a good idea to have no more than three strands of lights connected together.

By now, you should be an expert at knowing when (and how) to fix your incandescent holiday lights and when to just chuck them out. It may be an arduous process -- but hopefully this article will help you rescue some light strands that you were about to give up on! Happy decorating!

# Local/Online PDH Opportunities

For additional information regarding these opportunities, contact our office at [ESB1894@gmail.com](mailto:ESB1894@gmail.com) or 716-873-4455. Discounts for some pricing are available for certain society members, small companies, etc. And if you have information regarding future PDH opportunities that may be of interest to our members, please forward them to our office for inclusion in the newsletter and on our website at [www.tesb.org](http://www.tesb.org).

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# Top 5 Things You Didn't Know About Holiday Lights

By Pat Adams ([www.energy.gov](http://www.energy.gov))

**5. Holiday lights have a long, fiery history.** Candles were the original holiday lights, posing fire hazards for generations until Thomas Edison created the first electric lighting display for the holidays at his Menlo Park lab in 1880. While incandescent bulbs are less dangerous than open flame, they still cause an average of 230 home fires each year. In contrast, LED bulbs are cool to the touch.

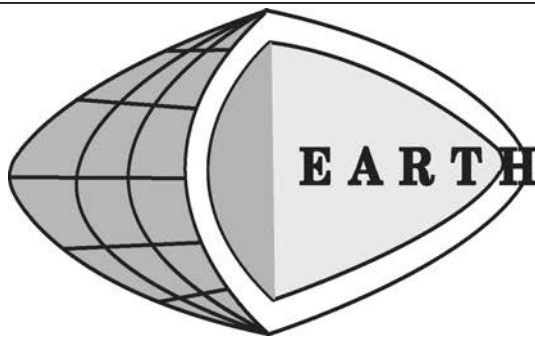
**4. You can recycle your old holiday lights.** Recycling programs around the country will take your old incandescent lights and recycle them for free. Some even offer rebates or discounts on LED lights to make the switch to more efficient lighting even easier. Find recycling programs at home improvement stores before the holidays or through online programs year-round.

**3. LEDs are worth it.** Yes, LED holiday lights cost more upfront than incandescent strands, but they'll save you money in the long run. LEDs consume 80 percent less energy than their traditional counterparts, and they last 25 times longer.

**2. Even when turned off, your lights are still using energy.** This is called phantom energy, and it costs Americans \$100 a year on average. If your lights have an on/off switch, save money by plugging them into a power strip and turning it off when not in use, especially when you go on vacation.

**1. Girls represented their home states with lights in the nation's capital.** Through Google's Made with Code program, girls across the country coded the LED lighting displays on Christmas trees representing their state or territory at the White House last year. The program encourages girls to explore STEM fields and become the next generation of #WomenInSTEM.

Learn more about LEDs and other options to make informed lighting choices all year long.

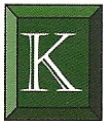


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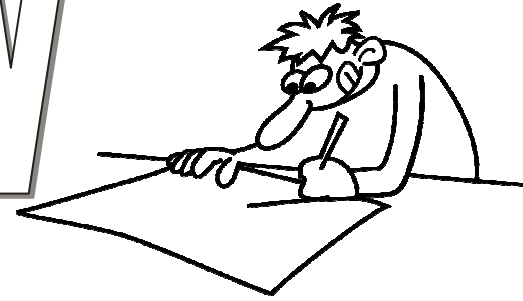
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## MEETING MINUTES

**Attendees:** Officers: Plizga, Samol  
Board Members: Bandriwsky, Cartwright, Mooney, Papaj, SanFilippo  
Members: None

**Call to Order:** President Michael J Samol called the meeting to order at 6:16pm

**Minutes:** No prior minutes were reviewed

### Committee Reports

**Advertising:** 25 of 30 advertisers will renew. 2 declined to renew. 3 have not responded

**Audit:** No report

**Bowling:** Next week will be turkey shoot. Half of bowlers win turkeys. Tom Glynn gets an honorary turkey. Christmas party at Tonawanda Lanes upcoming on Dec 23. Will include whiskey shoot.

**Bylaws:** Any changes need to be voted on at May elections.

**Education:** No report

**Endowment:** Balance is \$173,336 as of Jun 31, 2015. Cartwright asked how can we let members know they can leave money to ESB in their wills? Can scholarships be named after members?

**Events:** Cartwright, Plizga, and Samol met with UB about upcoming events. ESB can mentor UB engineers. Cartwright suggested a board meeting activity combination such as Laughing Yoga. January would be a better choice for this than Dec. Plizga suggested lunch meeting.

**Fundraising:** No report

**Golf:** No report

**Historian:** No report

**Media:** No report

**Newsletter:** No report

**Nominating:** No report

**Scholarship:** No report

**Scholarship Run:** No report

**Sunshine:** No report

**Y Membership:** Cartwright, Plizga, and Samol met with Paula and Bethany Mazur from UB. ESB could have future meetings at UB. ESB could participate in Engineer's Week. Could ESB offer a graduate scholarship? If so, how much money should be given? Papaj says UB has job fairs in October and April.

**Adjournment:** The meeting adjourned at 6:52pm

**Next Meeting:** Monday December 14, 2015

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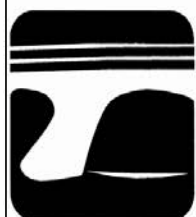
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# Potential Future ESB Events

Do you have any ideas for future events? If so, please send a quick email to [ESB1894@gmail.com](mailto:ESB1894@gmail.com)

- February 2016 Engineers Week Activities at the Buffalo Museum of Science
- May 2016 ESB Election
- June 2016 Car Show
- July 2016 Scholarship Run
- August 2016 Golf Tournament



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# News Blurbs Now!

ESB member Jon Kolber has deployed to Lincoln, Nebraska as a Corps of Engineers rehired annuitant to work on FEMA Disaster 4225. This disaster was caused by wind damage and flooding in May 2015. Jon is working as a project specialist, helping to resolve public assistance projects across the entire state by mid December 2015.

Online courses from UC Davis Extension will begin January 13 for around \$1000 each. Advance you career with “CAD for 3-D Printing and Rapid Prototyping” or “Additive Manufacturing with Materials” or “Introduction to Materials Engineering” or “Joining of Advanced Engineering Materials.”

Crane industry experts were recognized for their contributions to crane safety at the NCCCO 20th anniversary Gala in October. The event brought together those who had helped shape the nation’s first ever professionally developed crane operator certification program more than two decades ago, with those who had made contributions to CCO certification program more recently. “From day one, you wanted to make a difference,” said Kerry Hulse, Vice President of NCCCO, “...You are Difference Makers.”



“By leadership, we mean the art of getting someone else to do something that you want done because he wants to do it.” -Dwight D Eisenhower, 34th US President.

Merry Christmas from Robin M Closs SE PE. Want to stop in on Christmas day to say hi? Email her at [clossr@yahoo.com](mailto:clossr@yahoo.com).

Got a week? Make your townhome into a zero-energy home without any demolition...well in the Netherlands anyway. Energiesprong has created a kit of solar panels, facades, and a cube-shaped energy module. An estimated 111,000 homes will be retrofitted in the next five years. Read more at <http://www.fastcoexist.com/3046525/in-just-a-week-this-kit-turns-old-houses-into-zero-energy-homes-for-free>

Picone Construction will be the general contractor for renovations at Lifetime Health Medical Group. They have been hard at work at Emerling Ford in Springville, a mixed use (restaurants, commercial space, apartments) building in Buffalo, The Amberleigh in Williamsville, and Kenmore Mercy Hospital in Buffalo. They were honored by Buffalo Business First for being one of Western New York’s Top Private Companies.

The Oregon Department of Transportation has released a report that evaluates turn restriction alternatives to determine how effective they may be in addressing the safety and operational needs of the transportation network while still considering contextual sensitivities.

**We need your news blurbs NOW! We want to know about your recent projects, awards, hires, promotions, patents, new products, partnerships, open houses, tours, and anything else you’d like to share. Send your news to [ESB1894@gmail.com](mailto:ESB1894@gmail.com).**

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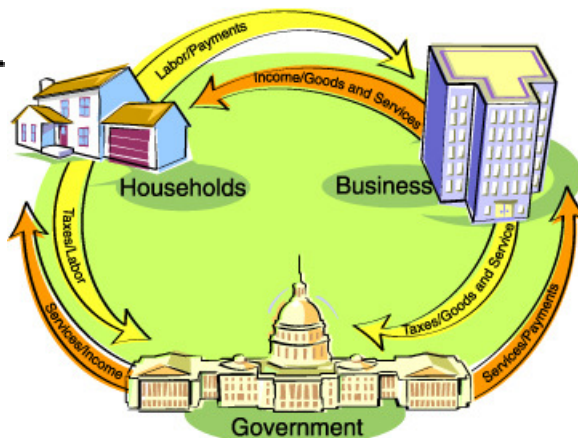
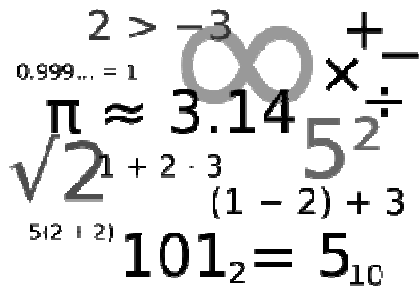
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Check out [www.tesb.org](http://www.tesb.org)  
for current events. It is  
updated regularly!

# Pioneering Women In STEM

By Jessica Arriens & Robert J Margetta

Annie J. Easley began her 34-year career as a mathematician for America's space agency after reading a newspaper article about sisters working at a nearby NACA (the precursor to NASA) lab. While working at NACA, she attended classes full-time at Cleveland State University, although she was denied access to tuition reimbursement male colleagues received. She worked in the Launch Vehicles Division, developing coding used in solar and wind energy experiments. Easley was one of a few African-



the recognition," Friedman told The New York Times. She continued to work and publish for decades before her death in 2012, including providing commentary



Americans at the agency. Easley once said her strategy was to focus on the work: "I'm out here to do a job and I knew I had the ability to do it." Daniela Rus' research portfolio sounds like a glimpse into the future. The first female director of the Massachusetts Institute of Technology's Computer Science and Artificial Intelligence Laboratory leads projects to develop robots that fly, swim and bake cookies. Perhaps her most ambitious vision, however, involves tiny robots that could combine and configure into anything users want.

on the 2008 financial collapse. Stanford's Susan Athey is one of the most prominent voices in economics, focusing on how technology transforms markets of today and tomorrow--including the Internet, online advertising and digital currency.

In 1894 Margaret Floy Washburn became the first woman to earn a Ph. D. in American psychology (just after one of her contemporaries, Mary Whiton Calkins, was denied a degree because she was a woman). Washburn is known for her work on sensation, perception and animal behavior. In 1908 she published "The Animal Mind," the first book on animal cognition that discarded speculation and relied on experimental data. She is also known for her work linking conscious thought to body movement. As a Vassar professor, Washburn included her students as co-authors on papers, a rare opportunity for female students at the time. Washburn became the second female president of the American Psychological Association -- following Calkins. Marcia K. Johnson continues to delve deep into the workings of the human brain, focusing on cognition, memory and emotion. Johnson heads Yale University's Memory and Cognition Lab.

The "high priestess of monetarism," Anna Schwartz, is an American research economist regarded as one of history's greatest monetary scholars. She is probably best known for her co-authorship with Milton Friedman of "A Monetary History of the United States, 1867-1960," a hugely influential book known for its conclusion that Federal Reserve Bank mistakes helped cause the Great Depression. That work led to a Nobel for Friedman, and many economists thought Schwartz should have shared the award. "Anna did all of the work, and I got most of

Authors can be reached at jarriens@nsf.gov and rmargett@nsf.gov. This article can be found in its entirety at [http://www.nsf.gov/discoveries/disc\\_summ.jsp](http://www.nsf.gov/discoveries/disc_summ.jsp)

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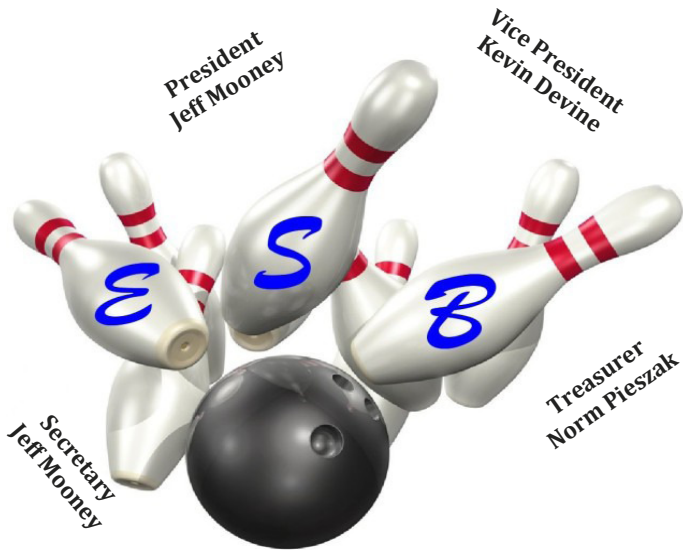
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4.	ODIES	48	24
5.	PROTRACTORS	41	31
6.	MESSY HOSE	39	33
7.	DEAD LOADS	37	35
8.	AVERAGE JOE'S	37	35
9.	THE FOUR HORSEMEN	36	36
10.	OUTCASTS	33	39
11.	CAD/CAMS	28	44
12.	JUNKYARD DOG'S	27	45
13.	AZZ CLOWNS	24	48
14.	SPLIT HAPPENS	13	59

Scratch Game

Jay Lorich	279
Hannah Mosher	258

Handicap Game

Adam Berg	327
Gina Cook	278

Scratch Series

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Gina Cook	792
Chris Marino	783

Cross Alley w/Handicap

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# Biography

The Engineering Society of Buffalo contemplates publishing biographical sketches of members in the monthly newsletter "The Western New York Engineer". For this purpose we would like the following information:

Date of Birth: \_\_\_\_\_ Married Y N

Member of what other clubs/societies: \_\_\_\_\_

Education: \_\_\_\_\_

In what engineering field(s) are you interested in? \_\_\_\_\_

Resume attached? Yes No

Sports & Hobbies: \_\_\_\_\_

Name of Spouse and Children: \_\_\_\_\_

Spouse: \_\_\_\_\_

Children: \_\_\_\_\_

Name as it should appear on ESB Membership Card: \_\_\_\_\_

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Picture by Robin M. Closs, SE PE

The book *Zero to One* by Peter Thiel has had the greatest impact on entrepreneur Franklin McCullough's life. Have you read it?



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