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NAZARETH COLLEGE DEPARTMENT OF MATHEMATICS

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The Changing of the Guards!

Cheri Boyd, having served 5 years as department Chair, has stepped down and then deserted us by going on sabbatical this year. Well, we can't say it wasn't earned. The Newsletter's own Matt Koetz is now Grand Moff.

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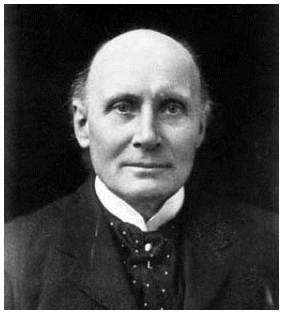

Inside this issue:

Our Newsletter

The North Star

Per aspera ad astra

Michael C. Walker Math Center

With a new home comes new names. And while many people have fond memories of the Elliott Math Center in Smyth Hall, we are busy creating new ones in the Walker Math Center in Peckham Hall. The dedication took place on May 15, 2013, with many of his family and friends around. Heather was able to attend part of the ceremony and speak to his wife and grandkids.

Michael C. Walker was born March 4, 1940. Mike graduated from the University of Colorado in 1962 and was a devoted member of Phi Kappa Psi fraternity. After college Mike served in the United States Air Force and the Air Force Reserve. Upon receiving his Ph.D. in Business, he served as Vice-President of marketing and finance at J.P. Morgan Chase. He then went on to

(Continued on page 2)

Alfred North Whitehead

Alfred North Whitehead (Feb. 15, 1861 – Dec. 30, 1947) was an English mathematician and philosopher who is best known for his work (along with his former student Bertrand Russell) *Principia Mathematica.* This 3-volume book laid the logical foundation for modern mathematics in an attempt (ultimately doomed by Gödel's Incompleteness Theorem) to provide the tools necessary to prove all mathematical truths. *Principia* is so foundational that it isn't until page 86 of Volume II that they prove that 1+1=2, with the comment "The above proposition is occasionally useful."

In addition to his work in mathematics, Whitehead was also a strong advocate for educational reform, and he often cautioned against teaching "inert ideas", that is, ideas that are simply small, unrelated facts. He also railed against standardized examinations – "I suggest that no system of external tests which aims primarily at examining individual scholars can result in anything but educational waste." – and felt strongly that imagination was important – "Imagination is not to be divorced from the facts: it is a way of illuminating the facts."

Whitehead's later career was focused on philosophy, a field in which he is highly regarded but notoriously difficult to understand compared to other philosophers. Despite this, his work remains influential in fields from ecology to business administration.

Upon his death in 1947, his family carried out his wishes that all his papers be destroyed, so very little of his personal life is known.

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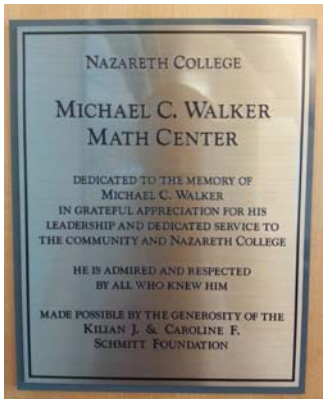


This article is essentially one long, modified quote from Mike's obituary from the Rochester *Democrat and Chronicle*, Jan. 31, 2012.

serve as CEO of Seniorsfirst for more than 25 years, where he was responsible for the design and implementation of an innovative program serving seniors in their homes that has been replicated across the United States.

Mike retired in 2002, but he continued to serve on numerous state and local boards of directors, including the New York State Medical Review Board, and the Board of Trustees at Nazareth College. He was an active member of the Kilian J. & Caroline F. Schmitt Foundation in Rochester, and it was the Schmitt Foundation that provided the donation for our new Math Center in Mike's name.

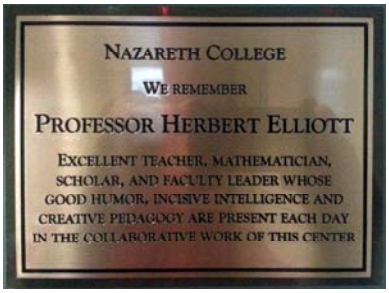
Mike's fondest memories were of family vacations to Cape Cod every summer for the last forty years, taking numerous side trips to state and national parks and historical sites, hitting the open road and traveling the American West with his wife, the community at Rolling Green and golfing with friends in Sarasota, FL, and Ridgemont Country Club, playing the role of "Mr. Halloween Man" for his beloved grandchildren every Halloween, and reading "Twas the Night Before Christmas" to them every Christmas Eve.

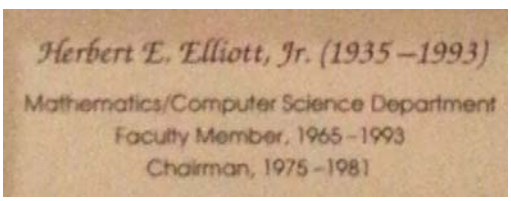
His treasures in life were his grandchildren Emelia, Sawyer, and Alden Duserick, and Lyla Walker, as well as looking forward to a new little baby Walker, due in March; brother Charles B. (Veronica) Walker; sister-in-law Susan Walker as well as several nieces and nephews.

Mike passed away in Spencerport on January 28, 2012, age 71 after a long and courageous battle with cancer. He is survived by his wife of 49 years and best friend Patty, his four children, Michael, Jr., Lyn, Lea, and Matthew, and their families.

Herb Elliott

Although we no longer have the Herb Elliott Math Center in the top of Smyth Hall, we have made sure that he is still featured around the department. We moved the photograph and plaque to Peckham Hall, in a little alcove with a table and chairs near several faculty offices. (Indeed, one of the offices is open in the background, which is great for chatting with people but, as it turns out, a little awkward for taking photos without reflection.)





Percival Lowell and the Putnam Exam

Percival Lowell was a math guy almost from birth (or, rather, almost a math guy at birth – he was born on March 13, 1855, just one day shy of Pi Day). He earned his undergraduate degree in mathematics, but also loved astronomy, and gave a talk about the Solar System at his Harvard graduation. He then went into textiles (the family business), but he didn't forget his early interest and in the 1890s decided to build a telescope. A massive telescope, not your basic backyard variety. His reasoning seems naïve today—this was right after Giovanni Schiaperlli saw *canali* (lines, or channels) on Mars, and P. Lowell was all about having a big telescope by 1894, when Mars would be super-close to Earth, where "super close" is by astronomical standards, since Mars ranges from 33.9 to 250 million miles from Earth. He did use the telescope he built in Flagstaff, Arizona to see markings on Mars, which he insisted were signs of intelligent canal-constructing life and loads of people believed him, though many scientists were not so sure.

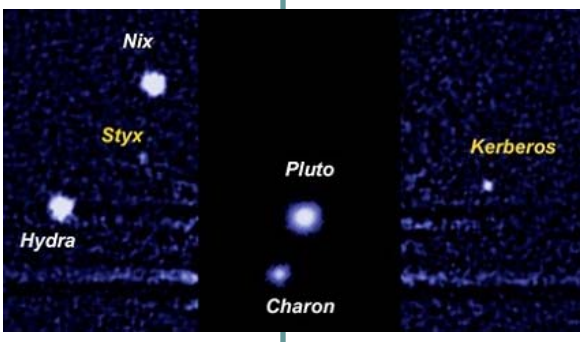
Percival Lowell looking at Venus, because he didn't play favorites with planets.

Fortunately, Percival Lowell didn't limit his astronomical interest to Martian Canals. In 1905 he began to look for a planet past Neptune (using MATH! And telescopes.), and even after his death in 1916 the search continued. His brother Lawrence Lowell made sure to secure funds to built a giant telescope at the observatory, which was completed in 1929. One year later, that new telescope was used in a discovery by farm-boy-turned astronomer Clyde Tombaugh, whose job involved taking photos of the sky and comparing them to what had been there a few days earlier (so lots of detail work with a side dash of keeping super-careful records). On February 1930, Tombaugh noticed a little speck of differences in two photos, and that speck turned out to be the planet Pluto. Yay Pluto!

Clyde Tombaugh at his family's farm with a telescope he made himself before the Lowell Observatory hired him.

So what does this have to do with the Putnam exam? You might recall that the famous six-hour super-hard math test is called the William Lowell Putnam Mathematical Competition. It was named by Elizabeth Lowell Putnam in honor of her husband, William Lowell Putnam II (known as William Lowell Putnam Sr.). This Elizabeth was this sister of the very Percival Lowell mentioned above, as well as being his half-third cousin (hence the "Lowell" common to both their names). The common ancestor was Judge John Lowell, born in 1743: siblings Percival and Elizabeth Lowell were the great-great-grandchildren of John Lowell and his first wife Sarah Higginson (John and Sarah → John Lowell, III → John Armory Lowell → Augustus Lowell → Percival and Elizabeth Lowell), while William Lowell Putnam was the great-great grandchild of John Lowell and his third wife, Rebecca (Russell) Tyng. (John and Rebecca → Rev. Charles Russll Lowell, Sr. → Charles Russell Lowell, Jr. → Harriet Lowell → William Lowell Putnam)

And as a final tie, the living William Lowell Putnam III (the grandson of the William Lowell Putnam of the Putnam Exam) is now the sole trustee for the Lowell Observatory. He's also a mountain climber.



NASA's photo composition of Pluto and its moon buddies, as seen through the Hubble telescope.

Sources: www.space.com/19774-percival-lowell-biography.html, www.lowell.edu, www.theuiaa.org/william-lowell-putnam.html, plus a healthy does of Wikipedia and a smattering of geni.com.

This issue was brought to you by the number 17

XVII

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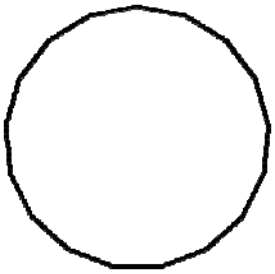
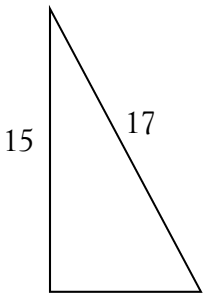
11_{16}

There are 17 different kinds of symmetric patterns that can show up on wallpaper.

Gauss proved, and Matt verified, that one can construct a regular heptadecagon with just a straightedge and compass.





10^{17} is 100 quadrillion, or 100 million billion(s)

17

Cl

chlorine

35.453

17 is the minimum number of givens in a sudoku puzzle with a unique solution.

$17 = (1^1)^1 + (2^2)^2$

17 is prime, half of a twin prime pair (with 19), and the sum of the first 4 primes.

Matt's quote of the issue: "The photos I uploaded to Google Drive and then transferred to Dropbox have been backed up to Google+."

Heather's quote of the issue: "Wait, what's that book in the background [of Herb Elliot's picture]? Is that a flexagon book? I need that! I think it's in the Math Center." (It was.)

Sudoku

		7	5				9	
		1	8		3	2		
					9	5		
4	2			3				
8	1		9		4		5	7
				1			2	4
		2	1					
		3	4		2	6		
	5				7	4		

brainfreezepuzzles.com

Rules: Fill in the grid so that each row, column, and 3x3 block contains 1–9 exactly once.

Solution to last issue's sudoku

6	4	3	1	2	5	7	8	9
8	9	1	7	3	6	4	2	5
5	7	2	8	4	9	3	1	6
4	1	8	9	5	2	6	7	3
7	5	9	6	1	3	8	4	2
3	2	6	4	8	7	9	5	1
1	3	4	2	9	8	5	6	7
2	6	5	3	7	4	1	9	8
9	8	7	5	6	1	2	3	4

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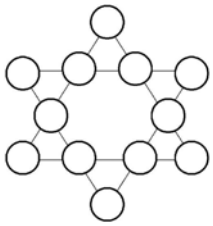
Problems

Solutions to Problems 8.1:
8.1.1: 3/4 A/s
8.1.2: 42 seconds
8.1.3: 3121 currants

Problem 9.1.1: Fill in the 6-pointed star below with the numbers 1-12 such that each line and the 6 "points" sum to the same value.



Problem 9.1.2: A study was made of 200 students to determine what TV shows they watch.

- 73 students watch only TNG.
- 136 students watch TNG.
- 14 students watch only DS9 and VOY.
- 31 students watch only TNG and VOY.
- 63 students watch DS9.
- 135 students do not watch VOY.

How many students watch no Star Trek shows?

Problem 9.1.3: The luminosities L_1 and L_2 of two stars satisfy the equation

$$L_1/L_2 = (R_1/R_2)^2 \cdot (T_1/T_2)^4.$$

If Star 1 has twice the radius and three times the temperature of Star 2, how much more luminous is Star 1?

Send solutions, articles, arcade wristwatches, chef pants, alumni news, crocheted ponchos, treehouses, or suggestions to Heather (hlewis5@naz.edu) or Matt (mkoetz1@naz.edu).