

The History of Mathematics

Although I've been fascinated by mathematics for as long as I can remember, my interest in the history of mathematics began during my senior year of high school. I was taking a course called "Advanced Senior Topics and Research" with Judy Zielinski, one of the best teachers I've ever known and the most important influence on my mathematical education from seventh grade until I graduated high school. The research component of that course involved a single research paper written in several stages over the course of the school year. My plan was to write a paper on the mathematics of the complex numbers, but this plan, and my approach to mathematics, was irrevocably changed once I encountered Paul Nahin's book, "An Imaginary Tale: The Story of i ."

Reading Nahin's book marked the first time that I was exposed to an in depth history of a mathematical subject. Instead of just giving the rigorous description of the mathematics that I had sought, Nahin wove the mathematics into a larger historical tapestry, providing vivid details about not only the sequence of discoveries but also the lives and influences of the many mathematicians involved in the quest. Even before I had finished reading his book, I began restructuring my paper in order to include some of these mathematical anecdotes that I'd just been exposed to. As soon as I finished my paper, I purchased a larger and more comprehensive tome, Stephen Hawking's "God Created the Integers," in order to continue exploring my newfound interest, and I did not expect to add any more books to this pair until I had finished reading this new volume.

Mrs. Zielinski had other ideas. She was retiring the same year that I graduated high school, and on the last day of class she asked me to come back to her classroom a week after school had ended. She said that she had a few textbooks that I might like, and suggested that I bring a box.

When I arrived the following week, I discovered that "a few" had turned into "take as many books as you'd like" from the dozens of textbooks that she'd accumulated on the shelves in our classroom. Her frequent suggestions helped me to quickly fill up the box I'd brought and I soon had another sizable pile on the adjacent desk. Finally, exhausted from having sorted through so many books and amazed at her generosity, I began preparing to carry all of the books out to the car, but Mrs. Zielinski asked me to wait while she retrieved a few other things that she wanted me to have.

She returned a few minutes later with three more items. The first was a four volume boxed set titled "The World of Mathematics," by James Newman. The other two were textbooks, an 1910 copy of George Osborne's "Differential and Integral Calculus with Examples and Applications" and an 1876 copy of Daniel Fish's "The Complete Arithmetic." They had all been given to her by the parents of some of her former students, but, now that she was retiring, she wanted to pass them on to me.

Along with the two books that I already had, these formed the beginning of my collection (and now, I could truly call it a collection). I've continued to add books to this set as often as I have both the opportunity and the resources, and over the last four years, I've extended the collection significantly in both of its major aspects, books about the history of mathematics and books *from* the history of mathematics. Now that my family is also looking out for interesting books to add to this collection, I've received several books as gifts. Most of the collection, however, has been acquired from a variety of library sales, online purchases, and frequent trips to local bookstores (including Powell's, O'gara and Wilson's, 57th Street Books, and the Seminary Co-op.

Some of my most interesting books have been found on ebay (which I search at least once a week for interesting and affordable math books). In particular, my frequent searches have paid off in the form of two books added to my collection just a few months ago, Zerah Colburn's "A Memoir of Zerah Colburn," and Daniel Adams' "The Scholar's Arithmetic."

Colburn's book easily fits into both categories that guide my collection, it was printed in 1833 and provides a fascinating glimpse into the life of a calculating prodigy in the early 19th century. Unfortunately, unlike William Rowan Hamilton, a calculating prodigy born a year later, Colburn was never able to find any success in mathematics. Since his father chose to put him on display around the United States and Europe instead of allowing him to receive a formal mathematical education, his only marketable skill was his ability to perform amazing feats of arithmetic. He died in his mid-thirties, just a few years after publishing his memoir.

Adams' book, on the other hand, is the oldest textbook in my collection. This was the second most popular arithmetic book of the early 19th century, and it had already gone through nine editions before the 1819 edition that I have was printed. The feature that makes it a particularly prized member of my collection, however, is the fact that it contains several short notes written into it by some students in the 19th century.

I'm very proud of the collection that I've already compiled, but my wish-list for the future is still very long. In the short term, I hope to add several more accounts of the history of mathematics as well as any more affordable antique textbooks that I can find, but if I ever have enough money to afford it, I would love to add some more valuable works to my collection (such as some first edition books by some of my favorite mathematicians).

My next two purchases will most likely be E.T. Bell's "Men of Mathematics" and George Gheverghese Joseph's "The Crest of the Peacock." Bell's well-known book provides biographies of several dozen famous mathematicians, and has often been criticized for favoring colorful storytelling over accuracy. Joseph's book, on the other hand, attempts to correct what he sees as an error in most accounts of mathematical history. Most books focus on the western mathematical tradition and downplay much of the influence of eastern mathematicians, so Joseph's book is written from the eastern perspective. Unfortunately, it's been out of print for several years, so I have yet to find a good copy in my price range.

Although I cannot yet afford the real treasures from the history of mathematics, like first edition copies of the books by Euler, Gauss, Newton, Riemann, and others, I have benefited from the fact that copies of many of these books are held in the special collections library at the University of Chicago. For the last few weeks, I've been compiling a list of such books, and thanks to the help of David Pavelich, I will be taking the math club to see them on April 2. For most of the members of the club, I hope that this will be an opportunity for them to better understand how mathematics developed, but for me, it will be an opportunity to meet some of the titles that I can't yet afford to add to my own collection.

(I suspect that this essay will not be read before April 2, but if it is, the Brooker Prize judges are welcome to join me and the rest of the math club in the special collections research center at 3:30pm on April 2).

Aczel, Amir. Fermat's Last Theorem. New York, NY: Dell Publishing, 1997. Condition: Fine.

Adams, Daniel. The Scholar's Arithmetic (stereotype edition, revised and corrected, with additions). Keene, NH: Printed by John Prentiss, 1819. Condition: Fair.

I discovered this book, the oldest in my collection, on ebay. In addition to being the second most popular arithmetic book of the early 19th century, its interesting features include its leather binding, tables for converting from several state currencies to the federal currency, and several brief notes written between some 19th century classmates.

Albert, Nancy. A Cubed and His Algebra. New York, NY: iUniverse, Inc., 2005. Condition: Fine.

Ball, W. W. Rouse. A Short Account of the History of Mathematics. New York, NY: Dover Publications, Inc., 1960. Condition: Fine.

Beckmann, Petr. A History of Pi. New York, NY: St. Martin's Press, 1971. Condition: Fine.

Boyer, Carl, and Uta Merzbach. A History of Mathematics. USA: John Wiley and Sons, Inc., 1991. Condition: Very Good.

Brooks, Edward. The New Normal Mental Arithmetic. Philadelphia, PA: Sower, Potts & Co., 1873. Condition: Fair.

Colburn, Zerah. A Memoir of Zerah Colburn. Springfield: G. and C. Merriam, 1833. Condition: Fair.
This is probably the strangest book in my collection. In this memoir, Zerah Colburn, a calculating prodigy born in 1804, reflects on his early life. Unfortunately, he spent much of his life touring the United States and Europe and being put on display by his father, at the expense of a formal mathematical education. He never found much success as a mathematician, eventually becoming a Methodist preacher before dying in his mid-thirties. This book is also notable for containing an engraving that, according to some people, shows that he was a polydactyl.

Cook, Mariana. Mathematicians: An Outer View of the Inner World. Princeton, NJ: Princeton University Press, 2009. Condition: Fine

Devlin, Keith. The Math Gene. New York, NY: Basic Books, 2000. Condition: Fine.

---. The Millennium Problems. New York, NY: Basic Books, 2003. Condition: Fine.

Dunham, William. Journey Through Genius: The Great Theorems of Mathematics. New York, NY: Penguin Books, 1991. Condition: Fine.

---. The Calculus Gallery: Masterpieces from Newton to Lebesgue. Princeton, NJ: Princeton University Press, 2005. Condition: Fine.

du Sautoy, Marcus. The Music of the Primes. New York, NY: Perennial, 2004. Condition: Fine.

Fish, Daniel. *The Complete Arithmetic. Oral and Written.* New York and Chicago, Ivison, Blakeman, Taylor & Co., 1876. Condition: Fair.

This was among the original group of books that was given to me by one of my high school math teachers.

Fitzgerald, Michael, and Ioan James. *The Mind of the Mathematician.* Baltimore, MD: The Johns Hopkins University Press, 2007. Condition: Fine.

Flegg, Graham. *Numbers: Their History and Meaning.* New York, NY: Schocken Books, 1983. Condition: Very Good.

Gowers, Timothy, June Barrow-Green, and Imre Leader, eds. *The Princeton Companion to Mathematics.* Princeton, NJ: Princeton University Press, 2008. Condition: Fine.

Gullberg, Jan. *Mathematics: From the Birth of Numbers.* New York, NY: W. W. Norton and Company, 1997. Condition: Very Good.

Hawking, Stephen, ed. *God Created the Integers.* Philadelphia, PA: Running Press, 2005. Condition: Fine.

Ifrah, Georges. *The Universal History of Numbers.* 3 vols. London, England: The Harvill Press, 1998. Condition: Fine.

Kolpas, Sidney. *The Pythagorean Theorem: Eight Classic Proofs.* Palo Alto, CA: Dale Seymour Publications, 1992. Condition: Very Good.

This was among the original group of books that was given to me by one of my high school math teachers.

Livio, Mario. *The Golden Ratio.* New York, NY: Broadway Books, 2003. Condition: Fine.

Mlodinow, Leonard. *Euclid's Window.* New York, NY: Touchstone, 2002. Condition: Fine.

Nahin, Paul. *An Imaginary Tale: The Story of i .* Princeton, NJ: Princeton University Press, 1998. Condition: Fine.

This is the first book that I ever read about the history of mathematics. I originally purchased it as a reference for a research paper in one of my high school math classes, but the fascinating stories it contained ended up seeding my interest in the history of mathematics.

Newman, James. *The World of Mathematics.* 4 vols. New York, NY: Simon and Schuster, 1956. Condition: Very Good.

This four volume set is one of my favorite items in my collection. It was given to me by Judy Zielinski, one of my high school math teachers, shortly after I graduated and she retired. This, along with a few of the other books that she gave me that same day both inspired and began my collection.

Robinson, Alvord. *The Arithmetic Help.* Chicago, IL: The Carnegie Book Company, 1903. Condition: Good.

Robinson, Horatio. Elements of Geometry, Plane and Spherical. New York, NY: Ivison, Phinney, Blakeman & Co., 1868. Condition: Good.

Ropp, C. Ropp's Commercial Calculator. A Practical Arithmetic for Practical Purposes. Bloomington, IL: C. Ropp, 1890. Condition: Fair.

Osborne, George. Differential and Integral Calculus with Examples and Applications. Boston, MA: D.C. Heath and Co., Publishers, 1910. Condition: Fair.

This was among the original group of books that was given to me by one of my high school math teachers.

Pappas, Theoni. Mathematical Scandals. USA: Wide World Publishing/Tetra, 2002. Condition: Fine.

Polster, Burkard. Q.E.D. Beauty in Mathematical Proof. New York, NY: Walker Publishing Company, Inc., 2004. Condition: Fine.

Ronan, Mark. Symmetry and the Monster. New York, NY: Oxford University Press, 2006. Condition: Fine.

I purchased this book after its author, a professor at UIC, gave a talk about the Monster, a fascinating and immense mathematical structure, at the University of Chicago. After his talk, he followed me over to the Seminary Co-op bookstore so he could sign it. This book is written from a rather interesting perspective, since the author personally knows many of the mathematicians who helped to discover and continue to work on understanding the Monster.