

Dear Claire,

May 28, 2023

Grandma and I wish you a Happy Birthday, and hope you have a wonderful day today on your 14th birthday. We wish we could celebrate your birthday with you in person.

As I told Ivy on her birthday, you and your family gave me a gift, called Storyworth, which asks me each week to tell you stories about my life and the things I have done so you can better understand your grandpa. I haven't done a good job doing that. But today I will tell you two *very long* stories, the first one about me and my first year in college at Purdue University, and a second one about the lives of your great-grandparents Betty and Jerry Waggoner. Part of your birthday gift entwines both stories.

My first story begins when I enrolled in Purdue's School of Engineering in 1974 when I was 21 with the intent of becoming a Nuclear Engineer. I had been interested in nuclear energy since Junior High. I read science books and built models of atoms using a plywood board and BBs to represent the nucleus and the surrounding electrons in orbit. In my freshman year at Purdue, I took classes in analytical calculus, physics, mechanics, and thermodynamics. They were hard classes for me. I remember taking a test in mechanics in one of the classrooms. The professor told us at the start of the exam that electronic calculators could not be used during the test because they were relatively new and expensive, and most students in the class didn't have one. He told us we could use a slide rule or a pen and paper to do the math for the test. As I remember, I tried to do the math with a slide rule at first, but I struggled with it and reverted to doing the math by hand. I had difficulty completing the exam in the allotted time and got a mediocre grade on the test.

When my sophomore year classes came out, I saw they were going to be much harder to complete. I asked my dad to meet me at the campus bookstore to buy a calculator for me. Hewlett-Packard first introduced their HP-35 scientific calculator in 1972 and made them through 1975. Dad bought one of these calculators for me. I fell in love with it and learned to use its unusual "Reverse Polish Notation" (RPN) method of doing calculations. I remember it being a relatively expensive purchase. Today I use a real HP-11C scientific calculator in my woodshop that I bought sometime in 1981-82. I also have an HP-11C app on my iPhone and iPad which I use all the time. The app cost \$10 from the Apple Store and works just like the physical calculator I have. You might want to try out that app one day.

After six semesters, two summer school sessions, and my marriage to your grandma in 1976, I graduated in August 1977 as a Mechanical Engineer. I didn't find a job at a commercial nuclear power plant like I wanted, but I did find one as an Engineer building nuclear reactors for the US Navy in Lynchburg Virginia. We lived there for ten years, from 1977 to 1987, a period in which we built a home and a pool, raised horses and dogs, and gave birth to your dad and your uncle. In my job I was involved with building reactors that went into the Navy's fast attack submarines and aircraft carriers. I got to tour the Nimitz aircraft carrier once. The ship was huge! Each of the links in the ship's anchor chain were about 3 feet long and six inches thick. The steel rollers to guide the chain's travel were about four feet in diameter. Sailors had to wear big headphones to protect their ears when it was being lowered into the ocean.

After Jerry left San Diego, Betty returned to Decatur and worked for a while. But she wanted to be with her husband. Dad found a way to get her to Morocco. With all her belongings in two large chests, she rode a train to New York and then hitched a ride on a US Army military transport ship bound for Casablanca called the USS General H.F. Hodges. It took 8-9 days to cross the North Atlantic Ocean. Military personnel bunked on the upper deck of the ship while women passengers slept on the lower deck. A picture of the *actual ship* is shown below. Mom told me her rescue boat was the second one on the left on the side of the ship shown in this picture. The ship swelled and rocked back and forth with waves ten feet tall!

Your great-grandmother made this journey by herself *when she was just 20 years old!* Can you imagine what it would be like traveling on a huge ship like this across the Atlantic Ocean all by yourself when you are twenty? I think she is a very brave woman.



In Africa, your great-grandparents lived in a small basement apartment in a relatively primitive hut type building. In Jerry's spare time, they visited the beaches and traveled to other cities in the area. Betty gave birth to me in 1953 in Rabat Morocco at a U.S. Air Force base hospital.

In June of 1954 Jerry received new orders, and the family left Africa and flew to Maine on a Navy transport plane. From there, they rode a train to Decatur Illinois and found a small apartment for Betty and Bill to live in. Jerry then flew to the Kwajalein Atoll Island, part of the Marshall Islands which is in the North Pacific Ocean, between Hawaii and China, on the other side of the globe, and reported for duty. He left the island one year later.



The family moved to Charleston SC where my sister Tracy was born. In 1957, dad retired from active duty and the family moved to a small house in Danville Illinois where my sister and I grew up. I remember him talking to people all over the world using transmitters, receivers, a device called a 'key' to tap out morse code, and a microphone to talk to other 'hams' as they are called. His call sign was W9QEQ. I have his key and his mike on display in my den with other family heirlooms.



In the summer of 2021, I sorted through all dad's radio equipment stored in the basement of his Springfield house and moved it upstairs into the garage. It took five pallets to store it all as you can see in the picture below. We were fortunate to find a radio repairman from Missouri who purchased all of it for his business and were happy that it did not end up in a landfill or a recycle bin. Instead, the equipment went to someone who knew what it all was, who could repair equipment that wasn't working, and who loved ham radio as much as my dad did.



When I was going through dad's things in the basement, I found something in a desk drawer, and immediately thought of you. I kept the item separate from all his other belongings and made plans in my mind to give it to you one day. Today is that day.

Care to take a guess what your gift might be? Give it a guess, and then go ahead and open the package wrapped up for you now.

Ref: <https://onih.pastperfectonline.com/webobject/3312BC63-42FD-4B11-9D85-700719812420>
https://americanhistory.si.edu/collections/search/object/nmah_1332602
https://en.wikipedia.org/wiki/Slide_rule

I suspect you may have guessed what was in the package... I don't know if you have ever seen a slide rule before or used one. I found this in the top left drawer of dad's desk, and it is now in my possession at my house. It is in perfect condition and has the original manual and cleaning guide that came with it. I asked my mother if she knew when dad bought his slide rule and she said he most likely bought it when he enrolled at Milliken University in 1949 as a freshman.

Based on engraved markings on the slide rule, it is a Keuffel & Esser model 4181-1 compact slide rule with what I believe is serial number 090717. It is also marked with "Copyright 1947 by Keuffel & Esser Co." on it. I did some research online and found information about it at the National Institute of Health and the National Museum of American History. I believe it was manufactured between 1945 and 1955. Three patents are engraved on the slide rule that matched records showing patents were issued between 1939 and 1950 for the No. 68 2047 slide rule. That is the number which is shown on the front cover of the "Slide Rule Manual" which I found with the slide rule. These timelines support the hypothesis that dad likely purchased his slide rule in 1949 while at Millikin.

I think dad would have taken his slide rule with him when he was deployed to Africa for the Navy. I don't remember buying a slide rule for myself when I started my freshman year at Purdue. I think the most likely scenario was that dad loaned me his slide rule to use at college, but I honestly don't remember whether that happened or not for sure. I like to think it was his slide rule that I used on that test I took. As they say, "*That's my story and I'm stickin' to it*".

I wanted you to have this slide rule from my dad for several reasons. First, you are math and science oriented and excel in these areas in your classes at school. I think you have a mind that is inquisitive and logical in your thinking process, and that you appreciate things that are factual and can be proven. There is a history of slide rules that originates in the 17th century. Of all the people in our Waggoner family, I think you, more than anyone else, would appreciate this artifact for its history and find it to be an interesting conversation piece. Perhaps you might show it to a teacher or show it at a math club meeting at your school. I don't expect you to use it for solving math problems you do for school, but you might find it fun to try it out just for the heck of it on a school homework problem.

Your great-grandfather owned this slide rule most of his life. Now I have had the privilege of keeping it for the past two years. Your great-grandmother gave me permission to give it to you. I am now passing it on to you.

I treasure this slide rule and consider it to be an antique keepsake and a family heirloom. Please take good care of it and preserve it as something that reminds you of your great-grandfather, your great-grandmother, me and your grandma, and the stories I've told you in this letter.

Now, please open your birthday card which includes the last page of this letter ...

Your grandma and I have given you some money for your birthday. You can use it for anything you want, maybe save some of it for your future, or maybe spend some or all of it on something you need or want - whatever you wish.

I'd like to challenge you to do a couple of multiplication type calculations using the slide rule. There are instructions in the Slide Rule Manual that show how to do multiplication with it, and there are sample problems to solve with answers in the back of the manual. You may find some YouTube videos that illustrate how to use it, and your dad may be able to help you learn how to use it too. In addition to multiplication, the slide rule can be used to perform division, proportions, trigonometry, square roots, logarithms, and other complicated operations. It was used for centuries before modern electronic calculators came to be.

Try to perform the calculations needed to answer two questions using the slide rule. When you figure it out, show your dad how you did the calculations.

- How much would 25 gallons of gas cost that sells for \$3.50 per gallon?
- How much would that same 25 gallons cost if gas sells for \$4.20 per gallon?

Have fun with the slide rule and your birthday money.

Love you,