

Joe McGonegal: This is the *MIT Alumni Books* podcast. I'm Joe McGonegal, Director of Alumni Education.

Of all the experiments from all the labs on the MIT campus over the years, perhaps none was more ahead of its time than the decision to accept Ellen Swallow Richards in December, 1870. Unbeknownst to Ellen, JD Runkle, the Institute president at the time, declared her admittance under rather limited conditions-- would be a grand experiment. The results of this experiment done so early in the Institute's history would shaped the direction of its trajectory into the elitist of higher education institutions in the century to come.

Richards's work ethic and brilliance in science and research silenced the critics, earned her bachelor's degree from MIT in 1873. And since then, over 26,000 women have followed in her footsteps. A century and a half later, Richard's first cousin three generations removed has authored a new biography. *The Remarkable Life and Career of Ellen Swallow Richards*, written by Pamela Curtis Swallow, was published in August.

For the MIT graduate who doesn't know this story, it's must reading. Pamela Curtis Swallow, thanks for joining me. What prompted you to write this book now?

Pamela Curtis Swallow: Well, as a Swallow-- and that is Ellen's maiden name-- we had reunions every year. I go back to when I was a toddler in Maine. I would hear some stories about Ellen Swallow. And then gradually, the generations were dying-- my grandparents' generation and my parents' generation.

And then probably about seven or eight years ago at the reunion, I realized that my generation was at the top of the ladder now. And people were looking at me when we talked about Ellen as if, OK, Pam, you're the family writer. How about taking this on? And I just decided, well, I will.

Even though I was an English major, not a scientist, I decided that it needed to be done. There were very few books about Ellen. None of them were in print anymore, and so I decided that I really wanted to tackle this. And luckily, my late husband was alive at that point. And he had degrees in both ecology and environmental science, which was a huge help to me when I got stuck on some of the things that she was working on.

McGonegal: Could you read us a short excerpt that demonstrates Ellen's personality to us?

Curtis Swallow: When Ellen and Robert were returning from their honeymoon, not only did they have a honeymoon, but it wasn't the romantic dreamy kind-- you go on a cruise or something. They went to Nova Scotia on a four week wedding trip with an entire class of Robert's mining and engineering students. They rode mules and traveled by buckboard.

And Ellen tromped through the mines wearing a short skirt-- which at that time meant ankle length as opposed to floor length-- and work boots. Such clothing was certainly not worn by fashionable Boston ladies.

In fact, upon her return to the Institute, several women who were introduced to Ellen for the first time were stunned to learn that this young woman still in her mining attire was a new bride just back from her honeymoon. And they were shocked that Ellen, a Vassar graduate, had a couple dozen extra young men along on the honeymoon. I just love that. She just did what had to be done. If you have to go on your honeymoon with all those guys--

McGonegal: No division between work and play there.

Curtis Swallow: No, not much.

McGonegal: We want to take all the credit for Ellen Swallow Richards at MIT, but we should know that this is a Vassar College story, too. She born and raised in Dunstable, moved to Westford, became a school teacher, and then was encouraged to try Vassar, which was a relatively new college at the time. A lot of the credit for inspiring her early career came from that professor at Vassar who encouraged her, yes?

Curtis Swallow: Yes. There were no schools in New England when she wanted to go to college that would teach women science. So she had learned through the fact that the Swallow general store also had a post office, and they had a magazine called *Godey's Lady's Book*, which was very popular in the 1800s. And it mentioned that Matthew Vassar was thinking of starting a school for women and that they would be teaching science.

One of the first people he hired was Maria Mitchell, the astronomer, who was not college educated but learned astronomy from her father. Also, they hired Charles Farrar, who was a chemist. And so between those two instructors, Ellen really got a good background.

And she really loved astronomy, but it didn't have a practical application for her. So the applied chemistry that she was taking from Charles Farrar really got her going. And luckily, both of

those scientists knew the president of MIT, and so they sent letters of recommendation. And I'm sure that's one of the things that helped her be accepted.

McGonegal: After Vassar College, we are grateful that a teaching job in Argentina fell through thanks to a civil war there, right?

Curtis Swallow: Yes we are.

McGonegal: She applied to chemical companies to get an honest chemistry job, and a few took interest in a woman in that field. One of them suggested that she apply to MIT-- brand new school. President John Runkle calling this an experiment-- do you look back at that as a slight to Ellen in your family? She said she wouldn't have gone through with it. Are you glad she did?

Curtis Swallow: Oh, I'm very glad she did. She was known as the Swallow experiment. And she thought that she was being admitted for no cost because she came from humble means. The Swallows have long been educators, but not wealthy people by any means.

So she was very surprised to find out that there was a good chance that they were just kind of toying with her to see if this was going to work. The male faculty-- they were really coming to blows about this. They had never put in the bylaws that they wouldn't take a woman, so they did this as the experiment.

But she was very tactful. She had an expression about not roiling the waters. When she realized that her laboratory was going to be down in the basement and she would be by herself down there with the door closed most of the time so that men couldn't see her, she kept quiet.

And she was useful. She helped a lot of the men. In the beginning, it was just simple things like if their buttons fell off or their suspenders broke, she had a little sewing kit. And she also kept a first aid kit with her so that when they burned themselves, they would come to her.

But after that, they realized that she was remarkably smart. And so she was tutoring a great many of the men that really were not quite up to snuff.

McGonegal: Talk about meeting her husband to be for the first time-- Professor Richards.

Curtis Swallow: She felt he was quite wonderful, and he was a very good looking man. As you can tell from any of the photos that you've seen of her, she was rather plain. Although it is said that when

she smiled and laughed, which she did a great deal, her face lit up and her eyes twinkled. And she was far more beautiful than her pictures showed her as being.

But she was quite taken with him, and she did love geology and mineralogy. And he was actually the first of the professors to actually let her out of her little room that she was supposed to stay and work with a male student who had arrived a little bit late in the semester. And the two of them work as a team and showed-- really, in a minor way-- that co-education was certainly possible.

And Robert Richards was very taken with her, and realized that she was amazingly good at being an assayer-- determining what kinds of elements and minerals were in the rocks that she studied. And she was coming up with things that almost no one else could figure out. And he did propose to her on the day she graduated.

But she was afraid that if she married him at that time, she probably would have to live in her house and not study science anymore, because married women weren't supposed to work. It didn't reflect well on their husbands. But he kept telling her over and over again that he wasn't going to ask her to do that, but she put him off.

First, she said, I can't marry anyone who smokes pipes, so he gave up his pipe. And then she said, well, I'm working on this water study, and I can't stop and get married in the middle of that. So that put him off a little longer. And then when she realized that MIT was not intending to bring more women in thinking that she was really kind of a fluke, she said, well, then I can't marry you until I get the women's laboratory going.

So all of this took a total of about two years. And by the end of two years, she realized that he really meant it when he said he wasn't going to ask her to stay home. He wanted to be a pioneer alongside of her, as she wanted to be. And they made a wonderful team. They were terrific together.

McGonegal: 35 years or so married until her death in 1911.

Curtis Swallow: Yes. He lived much longer. He lived to be 100.

McGonegal: What was hard about researching this? It's a little different from your work as a children's author.

Curtis Swallow: Yes, it is different. Most of my books are fiction. I've written a dozen, and this was quite

different. I love doing research, though. I had been a school librarian for about 25 years, and before that, an English teacher.

So that was actually joyful. And my husband was very helpful, because he was so familiar with the kind of work that she did. He said that when he was studying ecology and environmental science, he had to look at the same map that she had helped to create-- the normal chlorine map, which showed the pollution levels in the different types of water that was around that area.

And so that was really terrific-- having somebody that was that knowledgeable so that if I did get stuck or was a little insecure about talking about a particular experiment she was working on. I had someone who knew exactly what she was doing. That was terrific.

McGonegal:

Ellen founded the New England Kitchen movement in 1890, brought that out to the 1893 World's Fair. As you mentioned, Lake Placid Conference in 1899 and so forth. Was she more passionate about serving MIT, serving the city of Boston, serving America? It seemed like the three were in balance.

Curtis Swallow:

They were in balance-- and also serving the students in the Boston schools, because she provided lunches for all of those high school kids who were in the Boston schools. And she also learned a lot about the conditions in the schools, which were the worst in the country. She had some big arguments with the school board in Boston about getting their schools to be healthy and sanitary and safe.

But feeding people and teaching them about nutrition was very important, because people didn't know very much about it in those days. In fact, some people thought that fats, carbohydrates, proteins, and calories were like little critters that were scooting around in your food. I think she wanted so much to teach people how to live healthy lives, and to create healthy homes with good ventilation, and wisdom about things that seem obvious to us now, like not putting your outhouse next to your well, and not putting wallpaper up that contains arsenic, and closing your house so tightly that you don't have good ventilation, and learning the chemistry of cooking, and that kind of thing.

She wanted people to understand so many things. A lot of it was science, and a lot of it was common sense, but it wasn't common sense for everybody. She was quite remarkable that way. And I think she balanced all of the things that she did.

McGonegal: And letter writing with a young academic-minded female.

Curtis Swallow: Yeah. And through that--

McGonegal: Correspondence with them.

Curtis Swallow: --correspondence, which was the first long distance correspondence. It was ahead of what we've been doing now in terms of outreach. But she was corresponding with some of these people right up until she died, and she started out doing that when she was just in her early middle age. She was devoted to that. And some of these women that wrote about what she had meant to them and how she encouraged them-- she understood how people craved knowledge.

McGonegal: Tell me-- the undergraduate population last year was 49% women. The faculty at MIT-- the last poll in 2011 was 24% women. There is an Ellen Swallow Richards professorship. There is an Ellen Swallow Richards room. AMITA, the Association of MIT Alumni, celebrates her birthday each year. What else has MIT done to honor her legacy, or what else could it do?

Curtis Swallow: Well, I've talked to a few MIT undergrads and graduates who didn't know very much about her, which was surprising to me. I think some of the things are there, but I don't know that there is much said about them. I can't be sure about that. I think the book store-- it would be lovely not just to carry my book, but there have been in the past. Maybe they could get a few reprints of some of her work.

I was really thrilled when MIT had its first woman president. In fact, when Susan Hockfield met me, she was really quite emotional when she first walked out and gave me a hug. Because she said, without Ellen Swallow, she might never have been there.

but I'm thinking, too-- not just MIT, but I think the city of Boston could celebrate not just Ellen, but some of the other women who were remarkable at the time. It's hard to know, because not everybody at MIT is interested in the same branch of science that Ellen was. But I think it's important to have some lectures about her life and about her accomplishments so that people-- both male and female-- understand what she did and how steadfast she was in making sure that she kept that door open for women.

Because she could easily have just graduated and then toddled off and done something else someplace else and left MIT without what they ended up with, which was a wonderful school that is co-educational. And I don't want to tell them what they should be doing, because I don't

know even what is appropriate. But I think a few more lectures would be nice.

McGonegal: This being a books podcast, let me ask you, what were some of Ellen's favorite books?

Curtis Swallow: First, I have to say she was very, very fast reader. She not only read all the technical stuff that came to her, she read all the technical stuff that came to her husband. But she read everything. She read Emerson, and Theroux, and Alcott, and Poe, and Dickinson, and Twain. She was interested in just about everything that there was.

McGonegal: She died in 1911. Tell us the story of her last few days.

Curtis Swallow: She was certainly brave and determined and was going to get the most out of her life that she possibly could. And I think she had inherited, unfortunately, some of the weaknesses that her mother had had. But she was getting horrific chest pains on her way to give a speech outside of Boston, and she went in. Not only did she give her talk, but she then stayed on for about an hour afterwards to field question and then went home.

She didn't even tell Robert, because she didn't want to interfere with his work, which she thought was very important. And she did not realize how ill she was those last few days, until she finally had to ring a little bell to call him to her room to say that he needed to get the doctor. But she kept working right up to the end. And she was still writing assignments for her students and giving information to the two secretaries that were then working with her.

She toughed it out to the end. And one thing that made me very happy-- when I read about her funeral and realized that her pall bearers were people, most of which did not like the idea of having a woman at MIT or a woman professor at MIT, and yet they certainly had all changed their tunes as they had gotten to know her. And they were the ones that were carrying her casket. And I thought, how wonderful that was.

And MIT had all their flags at half mast. It certainly was a turnaround from the time she had to walk in the door in the beginning and go up those steps to the old MIT building, passing all those young men who were making nasty comments about a woman. And what a difference she made in her years at MIT.

I'm so proud of her. I can't believe that I've got some of the same genes. Yay!

[LAUGHTER]

- McGonegal:** You described Ellen's last speech she was writing for the 50th anniversary that she never delivered before she died.
- Curtis Swallow:** Yes Professor Williams Sedgwick, former student and later a colleague, wrote about her saying, other women may, and no doubt will, make addresses and write books upon sanitation in homes. But no one else can ever do these things as Mrs. Richards did them for the reason that she was herself an evolution and represented an epoch. Shortly before she died, Ellen had written a speech to be given at MIT's 50th anniversary celebration of its charter.
- She didn't live long enough to give the presentation, in which she had written, the technologist is one who can both think and act, who can translate his reasoning into results. And what is absolutely necessary in the education of a technologist is the creative spirit.
- McGonegal:** And what will your next book be?
- Curtis Swallow:** Well, I think the next book is going to be a biography of Ellen for younger readers, because I think there are so many girls-- they're almost afraid to say that they love science. But still, even in the time that we're in now, they're not as encouraged as the boys. So I would like to write a biography for perhaps like third, fourth, fifth graders about what it's like to be a woman scientist at a time when that was very, very, very unusual.
- McGonegal:** Pamela Curtis Swallow's new book, *The Remarkable Life and Career of Ellen Swallow Richards*, is available online or at your favorite local bookstore. Pamela Curtis Swallow, thank you for joining me.
- Curtis Swallow:** You're welcome.