



Ohio's Professional Soil Scientists

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My daughter Susan, who most of you know, is packing up to spend the next three weeks with her godparents in Cincinnati as her godfather, Bill Phillips, who is the primary care giver for his wife, Susan's godmother, is having his knee replaced. As is typical of such efforts, there have been many phone calls back and forth. In one of the calls Bill, who is fifth generation from the Phillips Apple Orchard in Berlin Heights, Ohio, asked me what I thought about the wonderful book *Lab Girl: A Story of Trees, Science and Love* by Hope Jahren. Well, not only had I not read it, I had not heard of it. How could that be he asked? It's all about soils and plants and field work and women in science! I should have asked where he heard about it but I suspect it was his brother Brad who is this generation to take care of the orchard. It's very possible that some of you overlapped at ATI and OSU Ag Campus in the 1970s and early 1980s with Bill's brothers, Paul and Brad who were training to take over the orchard. Brad also works part time for the Huron County Parks Department where, among other things, he is their spider expert. Their mom worked for Coop Extension so I know there are linkages to some of you.

Anyway, here is a highly recommended book from 2016 for us to consider for our winter reading. <https://www.theguardian.com/books/2016/apr/24/lab-girl-hope-jahren-review-story-of-trees-science-and-love>

Review

Lab Girl: A Story of Trees, Science and Love by Hope Jahren – review

Hope Jahren's remarkable memoir is both personal odyssey and the story of her profound affinity with the natural world



Hope Jahren: 'She marvels at the perfectly clean break of a leaf stem or the first leaves of a new plant, and you will too.' Photograph: Ressler Photography

Leaves, soil and seeds. Not normally words that make your pulse race. But they do light a fire in the mind and heart of Hope Jahren. In her hands, you will never feel the same way about these words again. Leaves become elegant machines, soil is the interface between the living and the dead, and seeds, well, they are transformed into the most patient and hopeful of all life forms. Jahren has such a passion for the natural world that it's hard to imagine her in any role other than her current one; a professor of geobiology at the University of Hawaii. *Lab Girl* is her engaging new memoir, which tells the story of her fight to establish and fund her own research laboratory. And it's been a fascinating journey.

The mass ratio of plant to animal life on land is around a thousand to one. Plants dominate the world
Jahren has spent her career carrying out research using plants both alive and fossilised. Teasing out information from their tissues to learn about the environmental conditions at the time when the plants existed, what the plants were made of and how they lived out their lives. During the hard times when research money was scarce she turned her hand to projects outside this area, working, for example, in techniques to help forensics. The reality of academic research is that you have to constantly apply for funding and be flexible enough to create your own opportunities.

Her memoir starts with Jahren's childhood in a rather cold and silent Scandinavian household in rural Minnesota. But out of this bleakness Jahren creates great atmosphere. She tells us how her father, a science teacher, planted a seed that was later to turn her into a scientist. She found warmth in his laboratory where she was allowed to play with "all the toys". For her, science and play are interwoven. Children explore the unknown and learn skills and knowledge along the way, and adults can too. The influence of her mother, an English Literature graduate, is also clear, and led to Jahren's becoming a fastidious reader. The fruit of this is seen in Jahren's prose. *Lab Girl* is immediately engrossing and extremely readable.



Lab girl: one woman's fight to overcome sexism and save the world

Academic research is rich with science stories and tales of human endeavour. And it's refreshing that Jahren talks to us about both. She tells us about the techniques she uses and the mass spectrometers in her laboratory that act as a scientific scale, allowing her to tell different atoms of different isotopes and chemical elements apart. But she also tells us about her battle with manic depression and the gritty side of her character that often compelled her to work long into the night.

Often, there's a sense of loneliness that runs through her book. This comes from her single-minded determination to have her own laboratory and the conviction that she alone was responsible for keeping the funding coming in. People depended on her, sometimes for their education and sometimes for their salary. And she depended on the lab for herself – it is her world.

But she hasn't been alone. Her lab manager, Bill, has been there through every research project, every field trip and every university move. He has

supported her on a personal level when funding was scarce and things seemed too hard to continue with. You can't help but admire this special relationship. Despite having painted a solitary childhood and an often solitary career, the picture builds into one of collaboration – with students, senior colleagues and her team.

An added challenge for Jahren has come from being a woman in science – a minority group. And although she doesn't dwell on this, it is clear that she feels it is the root cause of many of her struggles. The academic peers she speaks of are all male. There are no female role models. And when she became the first woman in her department at university to go on maternity leave, she felt betrayed at how she was treated, believing that she'd been banned from visiting her lab. So she left, moved to another university thousands of miles away and started her lab all over again.

The main theme of Jahren's memoir is survival: in science, in life, in love. For humans and for plants

Women in science is a theme discussed a lot in university departments these days. For my own area of physics the situation is much worse than in the biological sciences in the UK. And the flow is stemmed early. Only around 20% of A-level physics students are girls and a report by the Institute of Physics found that in half our state schools, no girls took physics A-level (in 2011). We won't increase academic physicists at the senior levels if there are none coming through with the right qualifications from school. But action is being taken. In the UK we have the Athena Swan Charter, which is working hard to make sure there are equal opportunities for both genders. Jahren is making herself accessible as a role model for younger generations of female scientists too.

Plants are centrally important to Jahren's life because they are centrally important to us all. The mass ratio of plant to animal life on land is around a thousand to one. Plants dominate the world. And she has her favourites too. The most memorable tree from her childhood was a blue-tinged spruce (*Picea pungens*) in case you are curious. The closeness she felt with the tree, and the realisation later in life that plants struggle for survival just as humans do, sets the scene for the rest of the book. The stories of plants and her life are laid out in interwoven chapters. In her research she has tried to see things from the plant's point of view and she has been very successful. Jahren is the recipient of three Fulbright awards and an award from the American Geophysical Union.

The main theme of Jahren's memoir is survival: in science, in life, in love. For humans and for plants. Only 5% of seeds falling on the earth will grow, and of these only 5% will grow to reach their first birthday. In these pages you'll find a renewed interest in the natural world and notice things that have been hidden in plain sight. Jahren marvels at the perfectly clean break of a leaf stem and the first leaves of a new plant – “The first real leaf is a new idea” – and you will find yourself marvelling too. Jahren writes: “Love and learning are similar, in that they can never be wasted.” And neither is time spent reading this book.

Lucie Green is a professor of physics at UCL, a presenter of the BBC's Stargazing Live and the author of 15 Million Degrees, published by Viking. Lab Girl is published by Fleet (£16.99). Click here to order it for £12.99