

Rutgers Faraday Children's Holiday Lecture: A Personal Retrospective by Mark C. Croft

I would like to take the 25th Rutgers Faraday Children's Holiday Lecture as an opportunity to thank and acknowledge those who have helped make this tradition a professional and personal high point in my life.

First and foremost, I would like to thank the thousands of adults and children who have attended the shows and have shared the love of science/learning over the years.

Second (indeed perhaps first) I would like to thank Dave Maiullo whose enthusiasm, expertise, hard work, and friendship has made these shows to flourish. The level of success that the Faraday Lectures have achieved are in great part due to Dave, as emphasized by his award winning off Broadway "That Physics Show". I would also like to acknowledge and thank the legion of highly motivated and talented students who, under Dave's expert tutelage, have made the show run like clockwork for all these years.

Finally, I would like to thank the Rutgers Physics Department which has supported and encouraged these shows. I will now turn to a personal perspective on the roots of these shows.

My earliest experiences in hands-on science came at my engineer-father's side at his work bench in the basement of our house in the Adelphi Maryland suburb of Washington DC. Indeed, these memories extend back to the first things I can remember as a child. My father would sit on a metal stool at his work bench and I beside him on my own smaller stool. He taught me electronics and chemical experiments that were interesting/exciting/startling. Electrical discharge arcs (with occasional shocks), and chemical changes (replete calibrated explosions) were standard fare at our work bench. Thus, it was from my father that I first learned the impact of dramatic science experiments/demonstrations on a young mind.

While in graduate school in the University of Rochester Physics Department I was a teaching assistant in Prof. Adrian Melissinos's physics-for-engineers course. Prof. Melissinos used extensive and dramatic physics demonstrations in his lectures. My job was to both set up the lecture demonstrations and to subsequently write summaries of them for the class. This experience inculcated me into the use of physics demonstrations from the very beginning of my career in physics. Having experienced the joy of science as a child and being conversant with the physics department's fine demonstration facility I started bringing lecture demonstrations into my children's classrooms and summer-camps while I was still at Rochester.

Upon joining the Rutgers Physics Department, I found an extensive physics demonstration facility and ethos. I started doing demonstration shows for my children's schools and camps around NJ. This expanded into shows at schools, astronomical society meetings, museums, summer camps ... I did these shows because the wide-eyed and smiling/laughing reactions on the children faces brought joy to my soul. I used to jokingly say that I could not charge money for these shows because no amount of money could cover the very substantial time/effort. Indeed, in addition to the show, these presentations also involved: lugging the equipment up/down the long Lecture Hall stairs (before the elevator); the van loading/unloading and site setup/breakdown. Including a preshow site visit, the shows involved more than a man-day of hard work. Finally, I reached the point where the traveling shows were just too much for me to handle and I had to stop doing traveling shows on my own.

I felt a real loss upon stopping these traveling shows. Thus, when my former student, Dave Maiullo, took over the Physics Lecture Hall I asked him if we could restart the demonstration shows collaboratively with an annual show at Rutgers. I was overjoyed when he agreed, despite the fact that the show was totally outside his job description and would entail a great deal of extra work on his part. Since that time of course Dave has become a nationally recognized leader in physics demonstration field.

We decided to name the shows after the famous Royal Institution Christmas Lectures founded by Michael Faraday in 1825 (and which continue to this day). Indeed, the original Faraday Lectures were intended to entertain the general public, and were replete with extensive/elaborate/exciting physics demonstrations.

When we initiated the Rutgers Faraday Children's Christmas Lecture in December 1998 the explicit "Children's" inclusion in the title was to emphasize that the lecture's intent to particularly involve/entertain/excite children (as well as adults) about the joys of science and learning. The substitution of "Holladay" for "Christmas" in the title was made later to make all feel totally welcome. When Rutgers Day began in 2009 the Rutgers Physics Department Demonstration show was included on the as one of its cornerstones.

This brings us to 2024, 25 shows in 26 years with 1 missed due to COVID. The accompanying Rutgers Day Show has been held every year since RU-Day inception with an online-only presentation streamed during

COVID. We will be doing a 2025 RU Day show. Looking back, I say that doing something solely because it contributes to the lives of others does wonders for one's soul.