

# Sifting Stars

Sometimes it's not the objects you first bring into focus, but the ones surrounding them, that prove the most interesting.

As director of the Phillips Academy Observatory at Andover, where she also teaches physics and astronomy, Caroline Haskell Odden '93 has experienced this firsthand. Whether describing her academic choices, what "real science" means to her or the kind of research she conducts with her students, Odden derives meaning from the surprises.

It was not at Nobles, but at Yale, that Odden took her first physics class. She thought she'd major in math but altered her course when she found that physics piqued her enthusiasm even more. "The very solid calculus foundation that I had, thanks to Bill Kehlenbeck, carried me through many courses in college that other people found really challenging," she says.

Odden describes her high-school self as a generalist who pursued English, art and band with the same energy as math, her favorite subject. Nobles teachers Kehlenbeck, Vicky Seelen, Mark Harrington and Bob Kern inspired Odden. Indeed, she spent four years teaching at Westminster School in Connecticut, which cemented her calling as an educator, and in 2001, she joined the physics faculty at Phillips Academy, in Andover.

Odden's skyward trajectory began with the launch of the Phillips Academy Observatory in 2004, where she was named director. She was also asked to teach astronomy, a field new to her. "I studied the textbook and stayed one step ahead of the students," she says. "Over the course of several years, with the help of friends who were more experienced than I was, I learned how to use the observatory and developed what is now a pretty vibrant research program."

Now, as a mentor and teacher for the NASA/IPAC Teacher Archive Research Program (NITARP), she is part of a faculty-student team that includes Nobles' own physics faculty member David Strasburger. Strasburger learned of the program through Odden, and he was accepted at the same time she was invited back as a mentor.

Odden loves viewing the night sky through the powerful telescopes at her observatory and conducting firsthand research, but she explains that many significant astronomical findings rely on mining vast repositories of preexisting public data—the basis for her NITARP research. Together, teachers and students on the intramural research team are examining data from public archives to identify potentially interesting astronomical objects, specifically ones that exhibit extreme infrared excess. Those objects

may then become worthy of study using the coveted world-class telescopes.

Odden finds that her students thrive on authentic research experiences. While many high-school science courses include important laboratory work, "students are given a set of instructions in which they are told what to do to arrive at a particular result. In *real* science, scientists develop a question, then identify a process and move

toward an answer.

Sometimes the result is different from what they set out to learn."

In presenting and publishing their work for

NITARP, Odden's students broaden their horizons and bring forward

their best, gaining confidence for college

and beyond. They also develop relationships with professional astronomers whom they can approach with questions throughout the course of their research.

Students who enroll in her popular astronomy course are already interested in the sciences. But what about those for whom it is less of a draw? "It's really important to educate as many people as possible in math and science, even if they don't end up having related careers. They're voting. They might be in a position where they have some influence," she says. "Having some level of education in math and science is valuable for everyone."

Odden tells her astronomy students, "This is information you'll appreciate knowing for the rest of your life. It's nice to have some sense of where you fit into the universe, what's out there and how it all started."

—KIM NEAL

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