

5. Jane Dewey: Pioneer in Quantum Optics

Carlos Stroud

The newly founded Institute for Applied Optics at the University of Rochester is not a place that you would expect to find a woman who was an expert in the emerging discipline of quantum mechanics. After all quantum mechanics is not usually listed among the subfields of applied optics, and the University of Rochester did not formally eliminate its separate Women's College and become truly coeducational until 1955—twenty-six years later. But, as unlikely as it might seem, there on the list of faculty of the Institute for the year 1929–1930 is Jane Dewey, special lecturer in quantum and wave mechanics.

Jane Dewey was certainly well qualified for the position. Born in 1900, she received her bachelors degree from Barnard College of Columbia University in 1922, and her Ph.D. in physical chemistry in 1925 working with F. G. Keys at Massachusetts Institute of Technology. She followed this with two years of postdoctoral studies at the Institute for Advanced Studies in Copenhagen, Denmark, working with Nobel Laureate Niels Bohr and Werner Heisenberg. She then studied with Professor Karl Compton at Princeton as one of the first group of National Research Council postdoctoral fellows. In 1929 Schrödinger's wave equation was only three years old, Einstein and Bohr were in the process of carrying out their famous debates on the interpretation of the new theory, and the new Institute had lectures by a woman who was one of the few scientists in the country competent to teach the subject, and almost definitely the only woman in the country who was so qualified.

In September 1929 Jane Dewey arrived in Rochester accompanied by her father, the famous educational philosopher John Dewey, and her husband, Alston Clark. Her husband, also a physicist, was a student at Cornell University, and the lectureship in Rochester was apparently the closest job that she could find. The “two-body problem” that plagues modern professional couples was an important factor in her life. Her father commented on his impressions of Rochester in a letter to his other daughter, Louise Romig.¹

Rochester is a nice town and they are developing the University—Kodak Eastman [sic] has given them 23 million dollars, and they have a new medical school—buildings alone cost 2 million.

Jane's appointment was described by University of Rochester President Rush Rhees in his 1929 annual report to the Board of Trustees as “being under the direction of the department of Geology assisted by several other departments upon the problem of the development of the technique of the quartz spectrograph to determine in small quantities the chemical substances not normally looked for in chemical compounds and to apply this technique to certain minerals.”² She was actually working under the direction of T. R. Wilkins, the acting director of the Institute of Applied Optics. She reports in a letter to her father a few days after she arrived:³

. . . I'm fairly well settled but not working very hard. In time I think they will start me a class of some kind, I spoke to Wilkins—my boss—about it and he said that not all members

of the department were here and he wanted to get them together on what advanced work would be given. I think he wants it to be in the Institute of Applied Optics rather than the physics department. This is not a place where you get up anything yourself, I wanted some apparatus moved and the mover declined to move it without Wilkins say so. He was very polite about it but that is what it came down to. Everything I want, no matter how slight has to be ordered through Wilkins. I have a swell office—filled with junk—but facing southeast and with three windows, but I declined to work in the room my apparatus is in as it is hermetically sealed. They said they would put in ventilation but I have seen no signs of it. I wanted to move the apparatus into my office but they preferred to put in ventilation, or said they did, we'll see what happens. Fortunately Wilkins is very good natured and has no intention of being domineering—he just runs everything because he can't imagine any other way of doing things.

This disagreement concerning laboratory space is not entirely unknown in modern universities, but it appears to be a sign of things to come. She left the University of Rochester in 1931 to join the faculty of Bryn Mawr College as assistant professor of physics. There she was soon promoted to associate professor and assumed the chairmanship of the Physics Department, but her marriage with Alston Clark broke up, and she applied for a leave due to health problems. Bryn Mawr then replaced her with a male professor. This was the deepest part of the Depression so that she was unemployed for four years until she landed a part-time evening teaching position at Hunter College in 1940. During the war she held an industrial position at U.S. Rubber Company, and then joined the staff of the Army's Aberdeen Proving Grounds where she remained until she retired.

While she was in the Institute she published one experimental paper based on the work that she had done at Princeton.⁴ It is perhaps ironic that her interests in semiclassical approximations to wave equations and the Stark effect in highly excited atoms would put her in the center of intellectual activity today, as Professors Alonzo, Bigelow, Eberly, and Stroud are all currently working on closely related problems.