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1981 Oersted Medal: I. I . Rabi and Melba Newell Phillips Award 1982

Robert Fuller
rfuller@neb.rr.com

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1981 Oersted Medal

I. I. Rabi

Robert G. Fuller
Department of Physics, University of Nebraska, Lincoln Nebraska 68508

What *is* good teaching? This question has no simple answer because good teachers differ dramatically in their styles, their personalities, and in their approaches to their students. One criterion, however, can be used to measure the effectiveness of a teacher and this criterion can be applied definitively: observe the students of a teacher ten years after they have graduated. The great teachers exert a profound influence upon their students, an influence that becomes a life-lasting focus for their work. By this criterion, I. I. Rabi is a great teacher.

Let us listen to a few of his students. Frank Press took courses from Rabi. While Press acknowledges that Rabi's classroom lectures were not the most carefully organized, he goes on to point out that "in terms of giving perspective to the significance of a particular discovery, the state of the art, the humanistic aspects of science, a sense of excitement — he was without peer. His influence on me was . . . really special." Norman Ramsey and Julian Schwinger were two of Rabi's many graduate students. Ramsey says, "I have learned more physics and more about many other subjects from my Ph.D. professor, I. I. Rabi, than from anyone else." Schwinger traces his "protracted fascination with atomic and nuclear moments and, more generally, the quantum theory of angular momentum" to his early association with Professor Rabi. Jerrold Zacharias, one of Rabi's many post-doctoral students, likens Rabi to a nucleation site, but Zacharias recognizes that the analogy falls short. "[Rabi's] form of nucleation site," says Zacharias, "consists in an active life of fomenting nucleation sites, which in turn generate new ones."

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I. I. Rabi

Melba Newell Phillips Award 1982

This award is given for exceptional contributions to physics education through leadership in the American Association of Physics Teachers.

The award will not be given annually, but occasionally to an outstanding physics educator.

In each generation of physics educators there are one or two persons who are recognized by all to be outstanding leaders. Such leaders — by creative suggestion, exhortation and example — inspire others to attempt difficult projects whose results benefit physics teachers and students everywhere. Melba Newell Phillips is such a leader, and much of her activity has been channeled through the American Association of Physics Teachers. She has served the Association as associate editor of both the *American Journal of Physics* and *The Physics Teacher*, as elected member of the Executive Board, as President, Executive Officer, leader in a movement to improve high school physics teacher preparation programs, Editor of the Film Repository, Chairman of the Issue Oriented Module development project, Editor of the 50th Anniversary commemorative reprint book, and Historian of the Association. It is to recognize her achievements and comparable contributions by subsequent AAPT leaders that this award was created by the American Association of Physics Teachers in 1981. The Association is proud to make the first presentation of this award to Melba Phillips.

Melba Newell Phillips

Oersted Medal

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One of the nucleation sites that Rabi was associated with was the reform in science education that began in 1956. As Zacharias aptly pointed out, this nucleation site generated new ones — many new ones. The physics curriculum project PSSC, with which Rabi was associated, was one consequence of the reform. Later, Harvard Project Physics was started with Rabi as a member of its Advisory Committee. There were many curricular projects that resulted from the concerns shared by Rabi and the other members of the President's Science Advisory Committee.

After his public schooling in New York City, Rabi went to Cornell University where he majored in chemistry. Later he returned to Cornell for graduate school, but he soon discovered that the part of chemistry he really liked was called physics and he transferred to Columbia University to pursue a Ph.D. in physics which he completed in 1927. After graduate school, he went to Europe as a Bernard Post-Doctoral Fellow. During the years 1927-1929, the years when the formal development of quantum mechanics was completed, Rabi worked with the principal architects of the new theory. He spent brief periods with Schroedinger, Sommerfeld, Bohr, and Heisenberg, but his two years in Hamburg, with Pauli and Otto Stern, were the decisive influence on Rabi's research career. It was upon the recommendation of Heisenberg that Columbia University offered Rabi a faculty position which he accepted in 1929.

During the 1930s, a school of physics was formed around Rabi and his students. With their molecular beams they measured nuclear spins and nuclear magnetic moments. The culmination of the decade was their development of the molecular beam magnetic resonance method which enabled them to measure nuclear properties with unprecedented accuracy. For this work Rabi was awarded the Nobel Prize in physics in 1944.