yonic forms of dark matter. Although hard evidence for particle contributions to dark matter has not been found, the connection between the inner space of particle physics and the outer space of cosmology is leading to innovative ways of thinking about both old and new problems in extragalactic astronomy.

Dark matter is being recognized as a fundamental phenomenon in the structure of the universe. The organizers of the conference and the editors of the book have provided an excellent topical summary of research in this exciting field.

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A Life in Physics

Rabi. Scientist and Citizen. JOHN S. RIGDEN. Basic Books, New York, 1987. xiv, 302 pp. + plates. $21.95. Alfred P. Sloan Foundation Series.

"Isn't physics wonderful?" I. I. Rabi wrote to Ernest Lawrence in 1948. Physics had indeed been wonderful to a boy raised in the lower East Side of Manhattan by immigrant parents with a weak grasp of English who, according to the author of this biography, changed the course of his adoptive country's physics in the 20th century from ordinary to extraordinary. Only in America? No, only by Rabi.

Rigden, himself a notable physicist and teacher, has produced a superb account that comes very close to being an actual autobiography of Rabi—indeed, it is part of the Sloan Foundation's series of autobiographies. He has made extensive use of taped interviews and frequently quotes Rabi directly. Rigden has a special knack for giving lucid explanations of arcane technical matters. Thus without mathematics or jargon, and without compromising the physics, he tells how in the late '20s at Columbia Rabi educated himself as well as his colleagues in the new quantum ideas being developed in Europe, and how he then went to Europe to participate himself in the quantum excitement. It seems to me that Rigden reaches poetic heights in explaining the intricacies and subtleties of Rabi's famous molecular beam experiments. If to my mind Rigden's explanations are about the best I have ever read, I do worry a little that his uncompromising honesty and close reasoning may still be a bit too difficult for the general reader, may turn the reader away from the nontechnical but equally important material that is to follow.

Rabi's talents were full of contradictions. Was he a great teacher? According to Rigden, his students uniformly testify that he was "simply an awful lecturer." Even so, some of his many students are now among the most illustrious of physicists. If they did not like his lectures, they still praise the inspiration he gave them, provoking them to think independently and deeply about physics. I personally remember the many times I have seen Rabi pocket a prepared speech (which I probably would not have liked) and then deliver a spirited talk full of wit and insight. Some of the phrases coined by Rabi have become a part of history: "What do you want—mermaids?" he asked the prosecutor in the matter of J. Robert Oppenheimer. In his 80s, at the 40th anniversary at Los Alamos, just the title of his speech, "We Meant So Well," summed up the sentiments of us who were there.

Was Rabi a theorist or an experimenter? He seemed to be so maladroit with his hands, we are told, that he was sometimes not allowed by his colleagues even to come near the apparatus. Was Rabi painstaking? Easily bored by the drudgery of an experiment he had initiated, he would show up, as if by magic, just as the results were emerging—just in time to analyze their meaning and to decide what should be done next. He has always insisted that he is a whole physicist, that he has done what it has been necessary to do to get on with revealing the underlying nature of physics. His students have especially learned this Rabiesque unity of approach to physics: it is in the great tradition but it is not too often in evidence today.

Religion too is a leitmotif of the book. We learn that Rabi seems never to have adopted the orthodox Jewish views of his parents. In place of a conventional Bar Mitzvah, his father invited in some friends to listen to Rabi's comments not on the Torah but on science. Yet he did inherit the sentiment of religion, for he says, "When I chose physics I was no longer practicing the Jewish religion, but the basic attitudes and feelings have remained with me. Somewhere way down, I'm an Orthodox Jew." Rabi goes on, "The whole idea of God, that's real class . . . real drama. When you're doing good physics, you're wrestling with the Champ." He is also quoted as having said, "I think that God is a good heuristic principle—a standard by which you judge things." These few quotations are but an enticing part of Rigden's fascinating treatment of this aspect of Rabi's life.

Rigden compares the creative brilliance of Rabi with the astonishing quickness, breadth of mind, and talent for lucid expression of J. Robert Oppenheimer. The two were lifelong friends with complementary talents who first met in the Europe of the '20s. Both returned from Europe determined to raise the level of American physics. This they did, Oppenheimer by establishing in California the first school for theorists and Rabi by training generations of superb experimenters in his Columbia laboratory. During World War II both played critical roles, Rabi in the development of radar and Oppenheimer with the atomic bomb. After the war both men become important in national as well as international affairs. Oppenheimer used his fame as the "father of the nuclear bomb" to promote his plan for international control of nuclear energy and then to oppose the hydrogen bomb. Rabi, characteristically working behind the scenes, was a driving force in the creation of the Brookhaven National Laboratory, of CERN, of Eisenhower's Atoms for Peace conference, and of the President's Scientific Advisory Committee and in many other such enterprises. Rigden's analysis of these two mutually supporting but very different friends is the best chapter of the book.

Jeremy Bernstein has produced, with his usual elegance and eloquence, a biography of Rabi (published in *The New Yorker* in 1975), but Rigden, by going into greater detail and by going deeper into Rabi's nonscientific life and thoughts has more thoroughly fleshed out and captured Rabi, both as scientist and as citizen, and set him neatly in his time.

The 20th century has been a time of high adventure in physics. It is no wonder that Rabi, with his ebullience and complex genius and wisdom, found his profession "wonderful." As Rigden demonstrates in this complete and very good book, physics was wonderful for Rabi and Rabi was wonderful for physics.

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Modernization and Health

The Changing Samoans. Behavior and Health in Transition. PAUL T. BAKER, JOEL M. HANNA, and THELMA S. BAKER, Eds. Oxford University Press, New York, 1986. xii, 482 pp., illus. $49.95. Research Monographs on Human Population Biology.

As more and more traditional societies grapple with the problems introduced by acculturation to Western technology, certain generalizations about the process of modernization and its health consequences have achieved the status of dogma. The first is the concept of demographic transition: High