

The cub and the pope

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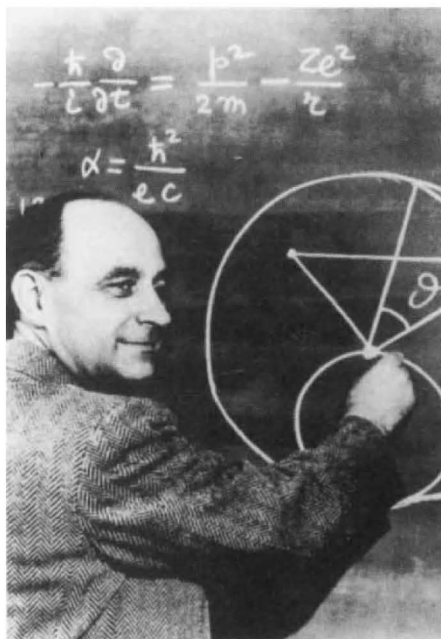
Enrico Fermi: Ricordi di allievi e amici. By Bruno Pontecorvo. *Edizioni Studio Tesi, Pordenone, Italy: 1993. Pp. 214. L30,000.*

BRUNO Pontecorvo died in Dubna on 24 September 1993 and did not have a chance to see in print his last work: the Italian (and only non-Russian) version of *Enrico Fermi v vospominanijakh uchenikov i druzej*, which he had written with V. Polrovskij back in 1972. He did, however, read the final proofs, and put in meaningful corrections in his shaky but lucid handwriting. A new, vivid portrait of Enrico Fermi comes out of the Pontecorvo stories, which make up most of the book. Other parts are less original. Some, such as memories of Emilio Segrè and others, have gone through a double translation cycle, from English to Russian to Italian, and have lost some of their freshness in the process. One generally feels that the Russian-Italian translation has received more attention (possibly by Bruno himself) than the English-Russian-Italian sequence, which also features a few funny mistakes. (On page 159 we discover a reference to "Adamar", obviously a transliteration from the economical Russian spelling of the name of the Franco-American mathematician Hadamard).

The Pontecorvo testimony is of unique human and historical value for the period of the roaring thirties in nuclear and atomic physics, when Bruno worked with Enrico at via Panisperna in Rome. In the hierarchy of that famous group, Fermi was "the pope", infallible in matters of physics, and Pontecorvo was "the cub", the youngest and last to join. For this, he had to pass the customary entrance exam under the ice-cold eyes of the pope. Afterwards, Fermi took the time to explain to him that "today, theoretical physicists are like Aegyptologists: if they are not absolutely first class and produce unique, outstanding work, they are of no use and have, obviously, taken up the wrong profession. Experimentalists, on the other hand, can produce useful work even if they are just average: they can, for example, accurately measure the density of all elements. This would be very useful work." Pontecorvo, later to become a very famous theoretician himself, was of course asked to join the group, but as an experimentalist. (He took his revenge at tennis, however. Bruno was throughout his life an excellent, tournament-class player, and, 12 years Fermi's junior, would consistently beat Fermi to pulp, judging him only an average player.)

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Fermi had a quiet, inner consciousness of his natural gifts and of his immense culture in physics, and this gave him the self-confidence required for producing truly original work. We learn that he acquired this self-confidence, still lacking in his greener years, after a visit to Paul Ehrenfest, in Leiden, for three months in 1924. He was then 23 and knew, and remembered perfectly, all that could be learned about physics at the time, but needed the reassurance of an accepted leader in the field. Fermi remained forever grateful to Ehrenfest, whom he considered to have had an enormous influence



Enrico Fermi (1901–54) had a "quiet, inner consciousness of his natural gifts and of his immense culture in physics, and this gave him the self-confidence required for producing truly original work".

on the development of physics in Europe. The other person whom Fermi, in his Italian years, thought at least his equal in theoretical physics was Ettore Majorana, the "great Inquisitor" in the via Panisperna, religion-inspired nomenclature. Majorana was in fact the only one who could make the pope ill at ease, with the acuity of his remarks, sometimes biting harsh, but always right. The pope, let us not forget, was a very young one: a chair in theoretical physics at 25, Accademico d'Italia at 27, of course the youngest ever. He did not especially boast about his position, but he liked the magnificent uniform that went with the title and did not mind spending 7,000 lire on it, more than three months' his professor's salary.

Pontecorvo, from a much wealthier upper-class family and with a definite suspicion of snobbery, was at the time living at the Young Men's Christian Association in Rome, and walking to via Panisperna daily, to record in his diaries the making of physics history. As a result, the

book now contains both anecdotes and profound scientific and human analysis of the work of Fermi and the group. All is invaluable material for the understanding of a period from which very few witnesses now remain. We know that Fermi named the "neutrino" (the small neutral one) the hypothetical Pauli particle; less well known is that he did so in October 1931, well before the announcement of the discovery of the "neutrone" (the big neutral one). This great moment in science, incidentally, received the usual blasé response from Majorana: "at last, Chadwick has seen the neutral proton", while most of the world was puzzled by the reported results. Shortly afterwards, Fermi wrote his famous theory about beta-decay, sent it to *Nature* and had it rejected as "too abstract, not interesting to our readership". (The work, a classic, appeared in *La Ricerca Scientifica*, the CNR journal.)

A strong new impression of Fermi jumps out of Pontecorvo's pages. It is impossible to draw a line between the man and the scientist: he would teach not only physics, but also how to understand its spirit and how to fall in love with it. In the making of a work of science, he was conscious of the high moral responsibility in publishing it, and was attentive to the accuracy of every word. Above all, a vast dose of common sense: no need to look for the "ultranuovo" when existing laws are perfectly adequate — provided, of course, that you know them well enough.

On the period that Fermi and Pontecorvo spent together in Italy, and more, another recent book is especially well researched and written: Miriam Mafai's *Il Lungo Freddo* (Mondadori, 1992), the story of Pontecorvo's life, including, of course, the period after his disappearance to the Soviet Union in 1950. Comparing it with Pontecorvo's own writing, actually preceding Mafai's book but independent, is illuminating, especially on the image that Pontecorvo had of Fermi, a dominant figure in his mind even after many years of geographical separation. □

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■ Fermi and Pontecorvo are among several Western scientists accused in a new book as acting as spies to give Moscow atomic secrets in the 1940s. In *Special Tasks: The Memoirs of an Unwanted Witness — a Soviet Spymaster*, Pavel Sudoplatov, an intelligence chief during the Stalin era, claims that Oppenheimer, Fermi, Szilard, Gamow and Pontecorvo provided, or knowingly allowed the transfer of, scientific information essential to the Soviet atom bomb project. The book was published last week by Little, Brown at £18.99 and will be reviewed in these pages on a later date. See also News in this week's issue.