

higher education system. Not only was the cost enormous, but Richter never even contacted any university in Argentina or admitted a single student into his laboratory. His contribution to developing physics in Argentina was a rather negative one. That affair would never have occurred if the government had initially asked advice from qualified local scientists.

While I was a physics student, I personally heard Richard Gans, director of the National University of La Plata Institute of Physics from the late 1940s through the mid-1950s, say that Richter proposed a thesis, at the German University of Prague, to detect "delta rays" emitted from Earth. Professor Heinrich Rausch von Traubenberg did not agree with the project. The "young genius" went to work somewhere else and graduated in a different field.

## Reference

1. M. Cardona, M. I. Cohen, S. G. Louie, <http://cabbib2.cnea.gov.ar/fali/Falicov1.pdf>.

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**Winterberg replies:** I wrote what Wolfgang Meckbach had told me after he had inspected Richter's laboratory to see if some of the equipment there could be used for his experiments. He told me what he saw: A magnetically insulated and acoustically after-heated high-temperature electric arc. I do not need, as Mayo suggests, any "secret" unavailable information to recognize that as a credible high-temperature plasma physics experiment. Wound into a closed ring, Richter's device becomes a tokamak-like configuration.

Richter's claim to have achieved fusion was wrong, of course, but so was the later, also widely publicized British claim that fusion had been achieved with the Zeta device. Unlike the British team, Richter worked in a vacuum. That makes his ingenuity remarkable, because it was not even known then that plasma physics might provide a road toward controlled fusion; I doubt that any of the Argentinean physicists Mayo names knew much about plasma physics. In Germany around 1952, Otto Hahn, the discoverer of fission, was asked by reporters about the feasibility of fusion. He said that colleagues had told him it was technically impossible. And in America many years earlier, around 1935, at a time when it was already known that stars are

driven by fusion energy, Albert Einstein said the same.

Richter, of course, had grossly underestimated the technical difficulties of achieving controlled fusion, but so had everybody else. According to Mayo, Richter had spent \$300 million, but according to Juan Roederer (PHYSICS TODAY, January 2003, page 32), it was 62 million pesos, or less than \$10 million in US dollars. Regardless which figure is right, the amount is small in comparison to the expenditures for the so far unsuccessful worldwide efforts.

What, according to hearsay, Richter as a young student with little knowledge may have proposed as a PhD thesis topic is irrelevant.

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## Somewhere Under the Rainbow

I would like to thank E. Blaise Saccocio for the beautiful picture of the double rainbow in the November 2003 issue of PHYSICS TODAY (page