Prof. Immanuel Estermann

Immanuel Estermann was born in Berlin in 1900, son of Leo and Rachel. His father was an ardent Zionist and in 1914 the family moved to Palestine and settled in Jerusalem. After the outbreak of the 1st world war, the living conditions in Palestine became very difficult, and the family returned to Hamburg before it the war ended.

Immanuel studied Physical Chemistry at the University of Hamburg and was awarded a doctorate in 1921 and immediately appointed a Lecturer. Soon after, he began a practically lifelong collaboration with Otto Stern. Together they developed the Molecular Beam technique and used it to produce a long series of seminal papers. One famous work was the demonstration of wavelike properties of Helium and Hydrogen. It was not clear at the time whether the de-Broglie principle applied to atoms and molecules or only to elementary particles like electrons which was demonstrated in the famous Davisson-Germer experiment. Estermann and Stern demonstrated the validity of de-Broglie principle by diffracting a molecular beam using a LiF crystal as a diffraction grating (I. Estermann and O. Stern, Z. Phys. **61**, 95 (1930)). A second famous paper which was later cited in the award of the Nobel prize to Stern was measurement of the magnetic moment of the proton , using a Stern-Gerlach type apparatus (I. Estermann, I. Frisch, and O. Stern, Z. Phys. **73**, 348 (1931)).

In 1933, when the Nazi party came to power, Estermann was dismissed from his post at the university along with all the Jews. He left Germany, and after a short stay in England he moved to the US with his family. The family settled in Pittsburgh where Immanuel was offered a position as an Associate Professor at the Carnegie-Mellon University, along with Otto Stern. During the Second World War, Immanuel worked first on Radar and then transferred to the Manhattan Project. At the end of the war he returned to Carnegie-Mellon where he was promoted to a Professor. Some years later, in recognition of past injustice, his alma mater, University of Hamburg, reinstated Estermann as Prof. Emeritus.

In 1950, Immanuel left Carnegie-Mellon to join the Office of Naval Research, first as a consultant and then as Director of its Material Science Division. In parallel, he continued to be the editor of the “Advances in Atomic and Molecular Physics” series of monographs, of which he edited 9 volumes. In 1959, Immanuel was appointed Chief Scientist and Scientific Director of the ONR in London, where he remained until his retirement in 1964.

The Estermann family had an ongoing association with Israel. Immanuel’s parents and his brother Theodor (named after Herzl) returned to Palestine in 1925. Theodor, who studied Mathematics with Hilbert, could only find a job as an “usher” in the Reali high school in Haifa. He went to London to look for a better future, and eventually became a Professor of Mathematics at the University College of London. The Estermann family was a family of academics. In addition to Immanuel and Theodor, Immanuel’s daughters Hannah and Eva were both Professors, one of Spanish and the other of Botany.

Because of the ongoing association with Israel, it was natural for Estermann to move to Israel after his retirement. He was appointed the Lidow Professor of Solid State

Physics at the Technion. His last paper was on the history of molecular beam research during the formative years of Quantum Mechanics when important discoveries were being made. He was not able to complete the paper, and the manuscript was later edited for publication by S. N. Foner (Am. Jour. Phys. **43**, 661 (1975), see additional material on this site).

Immanuel Estermann died in Haifa on 30th of March, 1973.