

of the total mass—that a whole galaxy might be disrupted and scattered.

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OBITUARIES

Prof. James Franck, For.Mem.R.S.

PROF. JAMES FRANCK died on May 21 at the age of eighty-one years. Born in Hamburg on August 26, 1882, Franck went to school there with indifferent success—as he was fond of relating—because he had trouble with classic languages. He began to study chemistry and geology in Heidelberg, but soon turned to physics and moved to Berlin where he graduated as Dr.Phil. in 1906, with a paper on ion mobility in gases. In 1907 he became research assistant to Prof. H. Rubens, in whose colloquia I first met him in 1908. I had the great good fortune to win his friendship and that of his family and to retain it for nearly sixty years. Only recently I was able to spend some weeks with Franck, visiting old friends together all over Europe, until a few days before his sudden death in Göttingen, on May 21.

In the First World War Franck went out as a private, was wounded, decorated and returned as a lieutenant. He was then assigned to a group led by the chemist F. Haber, who later, in 1918, made him a division head at the Kaiser-Wilhelm Institute for Physical Chemistry in Berlin-Dahlem.

How well I remember his famous lecture on May 22, 1914, "On the Excitation of the Mercury Resonance Line 2536 Å by Electron Impact" in which he reported his joint work with Gustav Hertz, which gave strong support to Bohr's new theory of the atom. Einstein said to me: "It's so lovely, it makes you cry!" Many a discussion between Franck and Otto Stern about those experiments I have listened to during the War years, whenever Franck happened to be in Berlin.

In 1920 Franck was called to a chair in Göttingen. Haber's farewell speech—at a party which Otto Hahn and I arranged—ended with the words: "There are three stages in the life of a scientist: becoming, being and representing; may representing come easy to you". I think Franck did not enter that last stage until a few months before his death, and it was not easy for him, despite the many honours that have come his way, among them the Nobel Prize in Physics in 1926 jointly with Hertz, the Max Planck Medal in 1953, the Rumford Medal in 1955, membership in many learned societies, and the election, in March 1964, as Foreign Member of the Royal Society.

Göttingen saw Franck's happiest and most fruitful period; he remained attached to it, received its honorary citizenship in 1953, and it is an odd turn of fate that he died there. There he did all his work on the transfer of energy in molecular collisions, as in the processes called quenching and sensitized fluorescence. Franck discovered the method of determining the heat of dissociation of diatomic molecules from band spectra by extrapolating the vibrational levels. His discussion of the coupling between electron transitions and vibrational motion led him to formulate the principle which was later put in wave-mechanical form by Condon and is known as the Franck-Condon principle. Thus the intensity distribution in band spectra and the existence of continuous molecular spectra came to be understood. The influence of those ideas has been far-reaching, particularly in photochemistry. His many pupils, still attached to Franck in affection and

devotion, include such famous names as Blackett, Condon, Kopfermann, Kroebel, Maier-Leibnitz, Oppenheimer and Rabinowitch, to mention some of them.

Those happy days ended when Hitler came to power. When the racial laws were announced, Franck published a courageous open letter in which he resigned his chair. In view of his distinguished war service he might have been allowed to stay, but he did not wish to serve under a Government which treated his fellow Jews as outcasts. After an interlude at Copenhagen, with Niels Bohr, he went to the United States, first to the Johns Hopkins University and then to the University of Chicago, as professor of chemistry. Here his efforts were devoted to the elucidation of the most important of all photochemical reactions, the photosynthesis performed by green plants. It is a borderline problem between physics, chemistry and biology, and one of appalling complexity. Franck's last paper on that subject, in collaboration with J. L. Rosenberg, went to press only a few weeks before he died.

During the War he interrupted his own work for two years to direct the Chemistry Division of the Metallurgical Laboratory of the University of Chicago, a part of the Manhattan Project. He saw it as his duty to help develop a nuclear weapon as long as Hitler might be doing the same. But he felt strongly that the United States should not be first in using it, and other scientists felt similarly. Two months before Hiroshima, a joint letter which became known as the "Franck Report" was sent to the U.S. Secretary of War, Henry L. Stimson, presenting strong and wise arguments against the unannounced use of that dreadful new weapon and suggesting that its power be demonstrated by publicly exploding it over an uninhabited area. Perhaps the nuclear arms race could have been avoided if that letter had been heeded.

Franck enjoyed talking about his problems, not so much to explain them to others as to clarify his own mind. Once a problem had aroused his interest he was completely captivated, indeed obsessed by it. Common sense and straight logic were his main tools, together with simple, mostly home-made apparatus. His research followed an almost straight line, from his early studies of ion mobilities to his last work on photosynthesis; it was always the energy exchange between atoms or molecules that fascinated him.

Franck was equally interested in people. His kindness and generosity, not only to his friends and family but to everybody who needed help, were known to all who knew him. He was the most lovable of men because he loved people; kindness shone from his eyes. There must be many beside myself who now feel they have lost one of their best friends.

I wish to thank O. R. Frisch and H. G. Kuhn for valuable help in writing this notice. LISE MEITNER

Prof. Isadore Fankuchen

THE death of Prof. I. Fankuchen on June 27 at the age of fifty-nine leaves a great gap among crystallographers in the United States and particularly, also, in Britain. He was a figure very well known and loved in both countries.