

obituary

Lew Kowarski

LEW KOWARSKI was the last survivor of the French team that, immediately after the discovery of uranium fission, explored the chances of a nuclear chain reaction. The paper by Otto Hahn and Fritz Strassmann reached Paris about 16 January 1939 and Frédéric Joliot at once saw its tremendous implications. Hans von Halban offered his experience of neutron physics and suggested that Lew Kowarski should join the team. Within weeks they had proof that neutrons, in causing uranium nuclei to split, produced further neutrons; by April they were sure that under suitable conditions those further neutrons would produce further fissions and vice versa, a chain reaction that would lead either to an explosion or to the generation of useful power if the reaction was controlled.

Born in 1907 in St. Petersburg (now Leningrad), Lew had an insecure childhood in a divided household, as son of a Jewish businessman and a Ukrainian singer. At the age of 12 he was smuggled from the Russian revolution to Vilna (in what later became Poland) across the remnants of the German army, some months after his father had gone there. He grew into a giant; musical though he was he had to give up his piano lessons when his fingers grew too thick for the piano keys; so it had to be science. With modest support from his father he studied chemical engineering in Belgium and France.

In 1929 he enrolled in the University of Paris, studying physics and chemistry from books and supporting himself by a job in a firm that made gas pipes, a job he kept part time until 1938. In 1931 he began work on a thesis on crystal growth in Jean Perrin's laboratory, made friends with his son Francis Perrin, and got in touch with Madame Curie, her daughter Irène and Irène's husband Frédéric Joliot just when the couple discovered "artificial" radioactivity at the end of 1933. That brought them the 1935 Nobel prize for chemistry, and Joliot then became professor at the College de France. Kowarski had already been his part-time unpaid assistant for a time; he now became a paid part-time secretary, "Joliot's little typist" as the huge Russian got nicknamed; and then he got a grant that allowed him to drop his other job, of designing gas pipe systems, about which he had just written a book. He still felt an intruder in spite of his doctorate, having got into science by the back door, at the late age of 31; but he was in.

The team agreed that, in publishing, no

ideas should be attributed to individuals; but later it became clear that some of the best ones had been due to Kowarski, who combined inventiveness with meticulous logic. The neutrons were slowed down in water to make them better at causing fission, but many were absorbed before they did. Kowarski urged that heavy water be used, known to absorb hardly any neutrons. It has to be extracted from ordinary water at great cost, and one firm in Norway was doing that; in March 1940 their entire stock, about 40 gallons, was moved to Paris just before the Germans attacked Norway. During that transfer those aliens, Halban and Kowarski, were interned on two separate islands! But time was running out; in May France was invaded, and in June — as instructed by Joliot — Halban and Kowarski escaped to England with their families and the heavy water.

At the Cavendish Laboratory in Cambridge new equipment was built with help from local physicists, mainly under the guidance of Kowarski while Halban negotiated with the USA. The results were promising, but much more heavy water was needed, no longer obtainable from Norway. And why should the USA help Halban, with his German manner, who waved French patents and allied himself with ICI? He seemed more intent to compete after the war than to help win it.

With influential friends and fluent English (though Kowarski soon caught up) Halban assumed a dominant position. In 1942 he was sent to Canada to set up a laboratory; Kowarski, offered an inferior post, decided to stay in Cambridge, as did some of his co-workers. Late in 1943, with some US help promised, (Sir) John Cockcroft took over from Halban, and at last Kowarski got his way: he came to Canada with his team to build a heavy-water reactor. He did it in less than a year; it was the first nuclear reactor outside the USA where Enrico Fermi had achieved the first self-sustained chain reaction in 1942.

After the war Kowarski would have liked to go back to England, where in Cambridge he had felt at home from the first day; but he felt in duty bound to return to France. Under Joliot, scientific head of the Commissariat a l'Energie Atomique, he began to prepare for nuclear power in earnest. Again he built a small heavy-water reactor, both for experimentation and prestige, which went critical late in 1948; nobody knew that the USSR had a reactor going two years before that. Bigger reactors were on the drawing board; would their main product be power or plutonium?

Joliot, now an open communist, publicly refused to make atomic weapons and in 1950 was dismissed from the Commissariat. Kowarski, still working for it part-time, found a new career with CERN, nursing that young European Centre for Nuclear Research. In 1948, his first marriage broken up, he had married Kate Freundlich, daughter of a German scientist; in 1954 they settled in Geneva for good.

As CERN grew his work was gradually taken over by others; in the end he concentrated on data processing with computers, whose importance he saw earlier than most; the device for measuring bubble-chamber tracks that Paul Hough and Brian Powell built with his guidance was used all over the world. A few years' working and travelling for ENEA (the European Nuclear Energy Agency) restored his freedom to visit the USA, denied for years because of his past work with that notorious communist Joliot, and enabled him to hold visiting professorships, two extended ones at Purdue University and shorter ones at Austin (Texas) and at Boston University. In his last years he worked to warn the public against too headlong a growth of nuclear power.

Outwardly like a big jolly Russian peasant, he had a nimble mind and a fine command of both French and English. Honest to the point of bluntness, he made some enemies and many devoted friends. His interest gradually shifted from science to the philosophy and strategy of scientific organisations. Overwork damaged his health, and the single kidney he was born with began to fail years ago; on 27 July he died in a Geneva hospital, cared for by his wife and his daughter Irene from his first marriage. That he survived so long was due to medical art, his own tremendous will, and the care of his calm and gentle Kate.

Otto R. Frisch

Percy Brian

PERCY WRAGG BRIAN died at the age of 68 on 17 August 1979. He was one of the leading botanists of the day with a wide range of interests.

Percy Brian graduated from Cambridge in 1931 with first class honours in the Natural Science Tripos, was awarded the