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My first Job

Title 26

During World War II, a world shortage had developed of suitable aviation fuel for fighter aircraft and what was needed then were large quantities of aromatic hydrocarbons. Weizmann was then again of the opinion that he could solve this shortage by a new chemical process, the catalytic cyclisation of long chain hydrocarbons. If he could make these chains form rings, they would become aromatic, like benzene or toluene. To carry out this research a small pilot plant had been built at M O R in Manchester and I was to work in it. This was the final explanation of my new job, given to me by Dr Steiner, the Israeli chemist in charge, working under Dr Bergmann and under Weizmann himself, who once came to see it and briefly talked to me.

Catalytic cracking was an old—established process in the oil refining industry, carried out at an elevated temperature by passing large gaseous molecules of raw petroleum through a reactor. There they broke down into smaller ones, which were the desired end product. But forming them into rings, as the new Weizmann process attempted, was entirely novel and no one knew which catalyst would achieve this.

The pilot plant was a little brick building, housing a small reactor, and a number of laboratory benches on which there were miniature reactors to find the best conditions of temperature and the most suitable catalysts to be tried out, before attempting them in the main reactor. I was working on one of the miniature reactors and I certainly carried out a large number of experiments to establish the optimum parameters for the main reaction. Much was learnt, but final success did not favour us. The catalysts we used were copper turnings and after each experiment they were found to be covered with a layer of carbon, which then had to be burned off, forming carbon dioxide.

I worked at the pilot plant for about 3 years, from summer 1941 on, and gradually became more and more frustrated as experiment after experiment failed under the specified conditions. Dr Ernst David Bergman was at the time I met him, lecturer in Organic Chemistry at the Hebrew University in Jerusalem and later the Director of the Daniel Sieff Research Institute in Rehovot. Above all he was the devoted handmaiden of Chaim Weizmann until a bitter strife broke their relationship and Bergmann switched his allegiance in the late 1940 to Ben Gurion, then Israel's Prime Minister. It was Bergman's scientific vision that Israel needed an atomic bomb for its ultimate defence and he could persuade Ben Gurion to share this view. Bergman then had a meteoric rise in Defence Bureaucracy as Head of Science in the Israeli Defence Forces in August 1948 and by 1952 he was the first Chairman of the Israeli Atomic Energy Commission. In the atomic triumvirate which succeeded in building the bomb at Dimona in the underground atomic reactor in the Negev Desert, Ben Gurion was the political master, Bergman the scientist and Shimon Peres the astute diplomat who was able to procure the essential uranium from France and the heavy water from Norway. All this I only learnt 60 years later, when Manchester's MOR had become a dim memory, but Avner Cohen's book *Israel and the Bomb* (Columbia University Press 1998) revealed it all. [See also Title 100]

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