

## **THE SOCIAL RESPONSIBILITY OF SCIENTISTS. TWO HISTORIC LESSONS**

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In 1850s during the Crimean War, in which Britain was at war with Russia, Michael Faraday was asked by the British government if there was any possibility of preparing quantities of poison gas for use on the battlefield and if he would head a project to perform the task, supposing it to be feasible. Faraday is said to have answered at once that the project was certainly feasible, but that he himself would have absolutely nothing to do with it. It is rather surprising that few decades later two Nobel Prize Winners initiated and worked on weapons of mass destruction.

During World War I Fritz Haber then director of the Kaiser Wilhelm Institut für Physikalische Chemie und Elektrochemie in Berlin-Dahlem, suggested the use of chlorine gas as a weapon. Officers of the Imperial Army rejected the idea. However, on Haber's insistence a field test was agreed upon. Haber was at that time an influential chemist – he had invented the ammonia synthesis process from which nitric acid and explosives could be manufactured on large scale.

A portion of Ypers front in Belgium was cleared from German soldiers, and Haber came with 5000 steel canisters filled with chlorine gas. On April 22, 1915 at 5 p.m. when the wind was blowing in the direction of Belgium, the valves of the canisters were opened and chlorine rapidly diffused in the direction of the French soldiers. About 160 tones of chlorine were released along a 7-kilometer front. Casualties were enormous. Otto Hahn the future Nobel Prize Winner, was assigned the testing of the gas cylinders in the front. During this period, Haber's Institute became a War Institute in which about 150 scientists and 2000 assistants were active. Among these, was Richard Willstätter who left his teaching position in 1912 at the Federal Technical University in Zurich to join Haber's Institute? He was awarded the Nobel Prize for chemistry in 1915 for his work on plant pigments.

When World War II started, British scientists were already world leaders in atomic research. In summer 1941, the advisory committee to the British Air Ministry headed by Nobel Prize Winner George P. Thomson concluded that the manufacture of atomic bombs of unprecedented destructive power was feasible. After exchanging reports with American and Canadian authorities, it was decided that no production plants should be built in Britain because of its easy range of the enemy and research should be pursued in North America. The British scientist John Cockcroft was appointed director of the Atomic Energy Division of Canada from 1944 to 1946. Before his arrival in Canada, some secret work was conducted at the University of Montreal for developing atomic weapons disguised under medical research.

Surprisingly enough, a research in Canada on anthrax was sponsored by the National Research Council Medical Department whose first director was the 1923 Nobel Prize winner Frederick G. Banting a graduate of the University of Toronto and famous for his isolation of insulin for the treatment of diabetics. Banting did also extensive mustard gas tests on volunteers. After the war, Prime Minister Mackenzie King decided to get rid of 2500 tonnes of mustard gas in the Atlantic while the U.S. disposed of 10,000 tonnes in both the Atlantic and the Pacific.

On the other hand, Hermann Staudinger professor at the Federal Technical University in Zurich who received the Nobel Prize for chemistry in 1953 for his pioneering work on macromolecules wrote a number of articles and presented in a number of public lectures in Zurich sharply criticizing the poisonous gas warfare. Joseph Rotblat, Linus Pauling, Andrej Sacharov, Bertrand Russell, Frédéric Joliot, Irène Curie, and Albert Einstein, all Nobel Prize Winners are excellent examples of those scientists who are well conscious of their responsibilities towards society. They strongly protested the utilization of weapons of mass destruction.