Marie Curie and the Flying University

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Three strong neighbors, Russia, Prussia and Austria-Hungary, partitioned Poland in the late 18th Century. The Flying University (*Uniwersytet Latajqcy* in Polish) was a special educational project (1885 to 1905) that took place in Warsaw, the traditional Polish capital, which was then under Russian control.

As imperial Russia sought to influence the minds of her subjects, it became increasingly difficult for Polish students to receive a Polish higher education. Subjects, such as the Polish language, Polish history and Catholicism were off-limits. Opportunities for women to study were even rarer.

The aim of the Flying University was to provide educational opportunities for Polish youth within the framework of traditional Polish scholarship. Classes began in 1882 in private houses in Warsaw. At first they were a series of secret education courses for women. In 1885, these were formed into a single, unregistered university open to both sexes. It was known as the Flying University because classes were held in different parts of the city, and locations were frequently changed to prevent the Russian authorities from arresting the teachers and students.

Though conditions were difficult, the Flying University, staffed by some of the best Polish academics, opened the door for many young people. One of the most famous alumni was Maria Skłodowska-Curie. She was to receive the Nobel Prize, not just once, but twice—the first for Physics, and the second for Chemistry.

The following are some excerpts from Marie Curie's autobiography, recalling what it was like to be a student in Poland:

> Warsaw was then under Russian domination, and one of the worst aspects of this control was the oppression exerted on the school and the child. The private schools directed by Poles were closely watched by the police and overburdened with the necessity of teaching the Russian language even to

> children so young that they could scarcely speak their native Polish. Nevertheless, since the teachers were nearly all of Polish nationality, they endeavored in every possible way to mitigate the difficulties resulting from the national persecution. These schools, however, could not legally give diplomas, which were obtainable only in the schools run by the government.

The state schools, on the other hand, were "directly opposed to the Polish national spirit. All instruction was given in Russian, by Russian professors, who, being hostile to the Polish nation, treated their pupils as enemies. Men of moral and intellectual distinction could scarcely agree to teach in schools where an alien attitude was forced upon them. So what the pupils were taught was of questionable value, and the moral atmosphere was altogether unbearable. Constantly held in suspicion and spied upon, the children knew that a single conversation in Polish, or an imprudent word, might seriously harm, not only themselves, but also their families. Amidst these hostilities, they lost all the joy of life, and precocious feelings of distrust and indignation weighed upon their childhood. On the other hand, this abnormal situation resulted in arousing the patriotic feeling of Polish youths to a high degree."

Maria Skłodowska was the daughter of Bronislawa and Vladislav Sklodowski, both educators. Her father was a scientist and freethinker. Her mother was a devout Catholic. Maria Skłodowska learned as a young science student to rise above what seemed like impossible limitations:

> I easily learned mathematics and physics, as far as these sciences were covered in the school. In this I received ready help from my father, who loved science. Unfortunately, he had no laboratory and could not perform experiments.
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> My lonely studies were fraught with hardship. The education which I had received in middle school was of a much lower standard.... I tried to supplement it on my own, with books I had gathered. It was not a very effective method, however I fell into a routine of lonely study and later I discovered how useful what I had learned was.

Maria did not give up. She learned not to be afraid: "I was surrounded by aggression....However I made it through, and my strong nature won out, freeing me from this nightmare...Rule number one was: never let people or situations take control over you."

In order to make a living, and to support her sister's education, Maria worked for some time in the countryside as a governess. As soon as she was able to return to Warsaw, she resumed her studies:

> This was no easy task under the Russian government in Warsaw; yet I found more opportunities than in the countryside. To my great joy, I was able, for the first time in my life, to find access to a laboratory: a small municipal physics laboratory directed by one of my cousins. I found little time to work there, except in the evenings and on Sundays. I was generally left to myself. I tried out various experiments described in treatises on physics and chemistry, and the results were sometimes unexpected. At times I would be encouraged by a little unhoped-for success; at others I would be in the deepest despair because of accidents and failures resulting from my inexperience. But on the whole, though I was taught that the way of progress is neither swift nor easy, this first trial confirmed in me a taste for experimental research in the fields of physics and chemistry.

When she looked back at her formation as a young scientist, Maria Skłodowska credited the Flying University for fostering an important sense of mutual support and solidarity. There was more to learning than individual acquisition of knowledge:

> Other means of instruction came to me through my being a member of an enthusiastic group of young men and women of Warsaw, who were united in a common desire to study, and whose activities were at the same time social and patriotic. It was one of those groups of Polish youths who believed that the hope of their country lay in a great effort to develop the intellectual and moral strength of the nation. We felt that such an effort would lead to a better national

> situation. Our main purpose was to work at one's own education, and at the same time, to provide a means of instruction for workmen and peasants. In accordance with this program we agreed among ourselves to give evening courses, each one teaching what he knew best. There is no need to say that this was a secret organization, which made everything extremely difficult. There were in our group very devoted young people who, as I still believe today, were doing truly useful work.
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> I have a clear remembrance of the sympathetic intellectual and social companionship which I enjoyed at that time. While the means of actions were poor and the results obtained were not considerable; yet I still believe that the ideas which inspired us then were the only way to bring about real social progress. You cannot hope to build a better world without improving individuals. To that end each of us must work for his own improvement, and at the same time share a general responsibility for all humanity. Our particular duty was to aid those whom we think can be most useful.

In 1891, Maria left for Paris where she studied at the Sorbonne University and where she received degrees in physics and mathematics. She married Pierre Curie in 1895. Together they made important discoveries about radioactivity, despite having very few resources at hand.

The Curies were admired for their devotion to science and to the common good. She wrote: "With my permission, Pierre gave up all material gains from our discoveries: we took no patents, and without restraint we announced the results of our research. We also taught our methods of uranium refining. We gave advice to anybody who asked us. This did a lot for the advancement of the radium industry, which was able to expand first in France, then later in other nations. It allowed scientists and doctors to have easy access to the products they needed."

In 1903 the Curies shared the Nobel Prize in Physics. After her husband's untimely death, Maria carried on the work. In 1911, she was awarded the Nobel Prize in Chemistry.

On July 4, 1934 Maria Sklodowska-Curie died at the age of 67. According to her doctor: "Maria Curie died as a result of malignant anemia, with abrupt symptoms and fever. Her bone marrow did not react in the usual manner most likely due to changes caused by extended radiation."

This year marks the 80th anniversary of the death of Maria Sklodowska-Curie. It is fitting that we remember her and the one-of-a-kind Flying University project with an essay in this *Tripod* issue devoted to education.

History was to repeat itself. The Flying University was revived between 1977 and 1981 in the People's Republic of Poland when education was once more overshadowed by political interference and censorship.

No doubt conditions in Poland at the turn of the 20th century, and even in the 1970s, were very different from those today in the greater China region. But the untiring spirit of Maria Sklodowska-Curie, her devotion to scientific pursuit, and her generous commitment to the greater good of humanity offer important lessons to all who seek truth.

References:

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