The Revolutionary Mathematician

Sophie Germain

[1 April 1776 - 26 June 1831]

EH=e
MH=R

Special Scientific Achievements

Scientific success in the field of number theory.

Important results in the analysis of prime numbers.

Winning a prize at a contest of the French Academy of Science.

1776 Sophie Germain is born in Paris.

1790 Early she shows interest and talent in mathematics.
Her family though regards it as "unnatural indulgence", and does everything to discourage her. Nevertheless she secretly sneaks into her father's library at night and teaches herself Latin and Greek, and reads the works of famous mathematicians.

1794 At the *École Politechnique* women are not allowed to enrol.
Yet, one student leaves the *École*, but keeps an enrolled status. Sophie takes the chance and studies under his pseudonym. She works obsessively, and submits brilliant works that gain the attention of the great mathematician Joseph-Louis Lagrange. He wants to meet the young man personally and Sophie reveals her secret. Lagrange's reaction is positive; he recognises her abilities and becomes her mentor.

1800 Sophie Germain discovers her passion for number theory, an area where she has the most scientific success.

1804 She corresponds, again under her male pseudonym, with the mathematician Carl Friedrich Gauß in Göttingen, Germany. An active exchange of letters starts, which continues even after Gauß learns by accident that his penpal is female.

1808 Sophie Germain works on the analysis for the solution of Pierre de Fermat's *Last Theorem*. She does not prove that one particular equation had no solutions, but contributes several equations by the analysis of prime numbers.

1809 Sophie changes field and writes a memoir on the vibrations of elastic plates, submitting her work to various contests.

1816 Sophie Germain wins a contest of the French Academy of Sciences, which is of immediate importance for being regarded as honored mathematician. She does not attend the award ceremony, when she learns that crowds have formed to see the "female miracle".

1830 Impressed with her scientific works, Carl F. Gauß convinces the University of Göttingen to award her an honorary degree – to no avail.

1831 Sophie Germain dies in Paris due to breast cancer. Her death certificate lists her not as mathematician or scientist, but depending on income derived from rents.

Note:
Sophie Germain never had a profession or an income corresponding to her great talent and her importance. She, who was only able to completely devote herself to mathematics thanks to the support of her family, was unknown in the history of mathematics for a long time.
Since her time, mathematicians have been profiting from Sophie Germain's works and thoughts without reference to a source.

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