With Reason: A Portrait of
Sophia Kovalevsky
(1850–1891)

JoAnne Growney

Because she was Russian . . .
Because she had abundant curly hair . . .
Because she loved mathematics . . .
Because she was born in the 19th century . . .
Because lecture notes for calculus papered her nursery walls . . .
Because her parents forbade her to leave home . . .
Because her sister died . . .
Because a woman could not travel abroad from Russia
    without her father or a husband . . .
Because ideas came to her in torrents . . .
Because she married a man she did not love . . .

Because her mind was powerful . . .
Because her passion was mathematics . . .
Because her mentor was Karl Weierstrass . . .
Because she extended Cauchy's theorem for partial
    differential equations . . .
Because she could not care for her daughter when
    exhausted by mathematics . . .
Because she investigated the refraction of light . . .
Because she knew Saturn's rings are unstable . . .
Because she understood fixed points completely . . .
Because she struggled with happiness . . .

Because she went to Sweden and the Northern Lights . . .
Because she was the first woman professor at a European University . . .
Because she wrote novels and a memoir . . .
Because her paper on the Rotation of a Solid Body about a Fixed Point
    won the Bordin Prize . . .
Because she continued Abel's quest to express Abelian integrals using
    elliptic functions . . .
Because her colleagues were not women . . .
Because she dreamed mathematics even in a lover's arms . . .
Because a poet wrote "her whose star shines bright"* . . .

Because she caught influenza, complicated by pneumonia,
               at age 41 Sophia Kovalevsky** died.

* *Notes:* From a sonnet by J. J. Sylvester (Audin 2011).
** Russian names have masculine and feminine forms, and the commonly
   used spelling "Kovalevsky" has a masculine ending. In Russia, Sophia's
   surname is "Kovalevskaya."

> For the Love of Mathematics, driven by reader suggestions and submissions, offers visual, engaging, and inspiring material for you, the teacher.

Focusing on algebra in graduate school in the 1960s, I learned of Emmy Noether (1882–1935) and the second-class life she was required to lead. I am unsure when I finally learned of Sophia Kovalevsky (1850–1891) and her work. By the 1990s, the Association for Women in Mathematics was at last celebrating Kovalevsky's achievements. She was (in 1888) the first female to win the prestigious Prix Bordin from the Paris Academy. My knowledge of Kovalevsky's life— her mathematics, her writing, her setbacks, her passions— was dramatically increased by reading *Too Much Happiness* (Munroe 2009), a tale that pushed me toward writing my poem.

POSSIBLY USEFUL LINKS

JoAnne Growney's blog: "Intersections—Poetry with Mathematics," https://poetrywith mathematics.blogspot.com

Emmy Noether: https:// scholarship.claremont.edu/jhm /vol7/iss2/14/

Alice Munro's book: http:// knopfdoubleday.com/munro/

The Association for Women in Mathematics: https://awm-math.org/

REFERENCES

Audin, Michele. 2011. *Remembering Sofya Kovalevskaya,* p. 213. New York: Springer.
Munro, Alice. 2009. *Too Much Happiness.* 1st ed. New York: Alfred A. Knopf.