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Moira Chas*, moira.chas@stonybrook.edu. *Alicia Boole Stott in the fourth dimension.*

The untimely death of George Boole in 1864, left his widow, Mary Everest and his five young daughters in a precarious economic situation. Despite this, all of them, mother and daughters, pursued with remarkable persistence artistic creation or scientific understanding of some sort.

Alicia (1860-1940), the middle daughter, without any formal mathematical training, rediscovered the convex regular four dimensional polytopes (the four dimensional analogues of the Platonic solids in dimension three and regular polygons in dimension two) and studied their sections, that is, intersections with three dimensional planes.

In dimension four, there are six convex regular polytopes: the simplex (whose faces are tetrahedra), the 4D-cube, the 16-cell (dual of the 4D cube, whose faces are tetrahedra), the 24-cell (self-dual, faces are octahedra), the 120-cell (whose faces are dodecahedra) and the 600-cell (dual of the 120-cell, faces are tetrahedra).

In this talk we will discuss Alicia Boole Stott's geometrical ideas, as well as recently discovered facts about her mathematical path. (Received January 18, 2020)