

She Blinded Me With SCIENCE!!!!

A LOOK AT PROMINENT CONTRIBUTIONS TO SCIENCE THROUGH THE AGES.

MATT CASS



The material contained in this document is based upon work supported by NASA under grant award No. NNH15ZDA004C. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Aeronautics and Space Administration.

A Little (in the) Background



Let's Give Them Something To Talk About

- ▶ Ada Lovelace
- ▶ Émilie Du Châtelet
- ▶ Annie Jump Cannon
- ▶ Jocelyn Bell Burnell (Pulsars)
- ▶ Vera Rubin (Rotation of Galaxies – Dark Matter)
- ▶ Marie Curie (Radioactivity – Two Nobel Prizes)
- ▶ Rosalind Franklin (DNA – Double Helix)

Augusta Ada King, Countess of Lovelace

The Poetical Scientist

- ▶ 10 December 1815 – 27 November 1852
 - ▶ Daughter of Lord and Lady Byron (Yes, that Lord Byron.)
 - ▶ Mother pushed mathematics.
- ▶ Worked with Charles Babbage, Michael Faraday, Charles Wheatstone, Mary Sommerville
- ▶ Considered by many as the author of the first computer program for Babbage's Analytical Engine.
- ▶ *"Imagination is the Discovering Faculty, pre-eminently ... It is that which feels & discovers what is, the REAL which we see not, which exists not for our senses... Mathematical science shows what is. It is the language of unseen relations between things... Imagination too shows what is ... Hence she is or should be especially cultivated by the truly Scientific, those who wish to enter into the worlds around us!"*



Gabrielle Émilie Le Tonnelier de Breteuil, Marquise du Châtelet - The Most Metal of Scientists

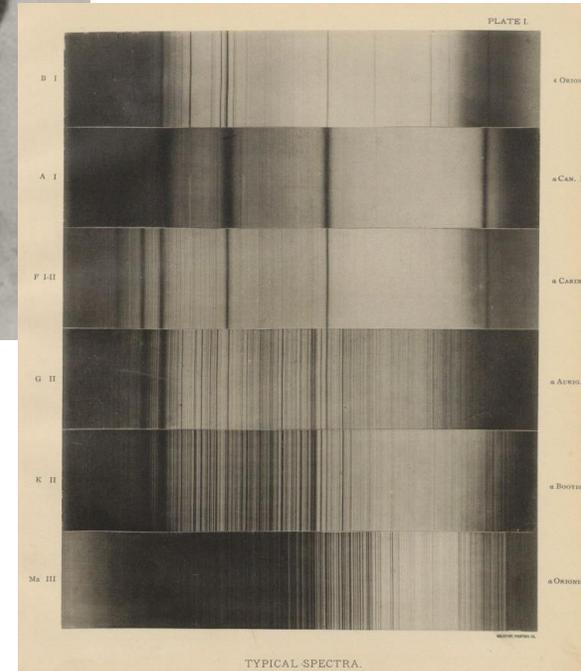
- ▶ 7 December 1706 – 10 September 1749
 - ▶ From a family of minor nobility.
 - ▶ Questions surround how she received her formal schooling.
- ▶ Worked with Johann II Bernoulli, Leonard Euler, Voltaire.
- ▶ Translated the Principia (510 pages) from Latin into French (with her own commentary), opening the world of Newtonian physics to wider audience. While pregnant. As a single mother. Died 6 days after giving birth – approximately a week after finishing her commentary.
- ▶ Her strict schedule was:
 - ▶ Awake 8 or 9 am, skip breakfast.
 - ▶ Write until 3 pm, 1 hour coffee break.
 - ▶ Write from 4 pm until 10 pm, 2 hour dinner break.
 - ▶ Write from 12 am until 5 am, sleep until 8 or 9 am.
- ▶ *“Let us be certain of who we want to be. Let us choose for ourselves our path in life, and let us try to strew that path with flowers.”*



Annie Jump Cannon

A Stellar Scientist and Honorary Doctor

- ▶ December 11, 1863 – April 13, 1941
 - ▶ Daughter of a Shipbuilder/State Senator of Delaware
 - ▶ Mother fostered her love of astronomy and mathematics.
 - ▶ Became deaf by early adulthood – Scarlet Fever?
- ▶ Worked with Edward Pickering, Sarah Frances Whiting, Henrietta Swan Leavitt
- ▶ Oh Be A Fine Guy, Kiss Me – Less Talk (OBAFGKM/LT) – established the stellar spectral classification system we use today. The most celebrated of the “Pickering Women” who classified the Henry Draper catalogue.
- ▶ *“Teaching man his relatively small sphere in the creation, it also encourages him by its lessons of the unity of Nature and shows him that his power of comprehension allies him with the great intelligence over-reaching all.”*



Want to try Stellar Classification?

- ▶ Citizen Science Opportunity
- ▶ <http://scope.pari.edu/login.php>
- ▶ Free, easy, fun learning activity.

The image shows a screenshot of the SCOPE Stellar Classification Online Public Exploration interface. The browser window title is "SCOPE - Classifier Applet - Google Chrome" and the address bar shows "Not secure | scope.pari.edu/starclassifier.php?". The main heading is "Classify a Star". Below this, there is a section labeled "Your Star" with a spectral plot and the classification "A1". A navigation bar contains zoom controls (back, +, 1:1, -, forward) and buttons for "Show Help" and "View Base Level". Below the navigation bar, there are four spectral plots labeled "A0I", "A0Ia", "A1I", and "A1V". A mouse cursor is pointing at the "A0Ia" plot.

SCOPE
STELLAR CLASSIFICATION ONLINE
PUBLIC EXPLORATION

SCOPE - Classifier Applet - Google Chrome
Not secure | scope.pari.edu/starclassifier.php?

Classify a Star

Your Star
A1

Show Help View Base Level

A0I
A0Ia
A1I
A1V

A final appeal for women in STEM

- ▶ Shouldn't be reserved to a month or day – the STEM fields should just be an inclusive environment.
- ▶ Equity in Education.
- ▶ We need ideas from EVERYONE!
 - ▶ There are problems that still need solving.
 - ▶ New and novel ideas are what will carry us forward as a species.
 - ▶ Want to share some of yours?
Try our SpaceApps Challenge – October 18th – 20th.
 - ▶ <https://2019.spaceappschallenge.org/locations/sylva-nc/>

Thank you!

- ▶ Please join us on the steps outside for the telescope viewing.
- ▶ Complete the solar system walk scavenger hunt and win a prize!
- ▶ Moon related activities.