



Stellar Spectra

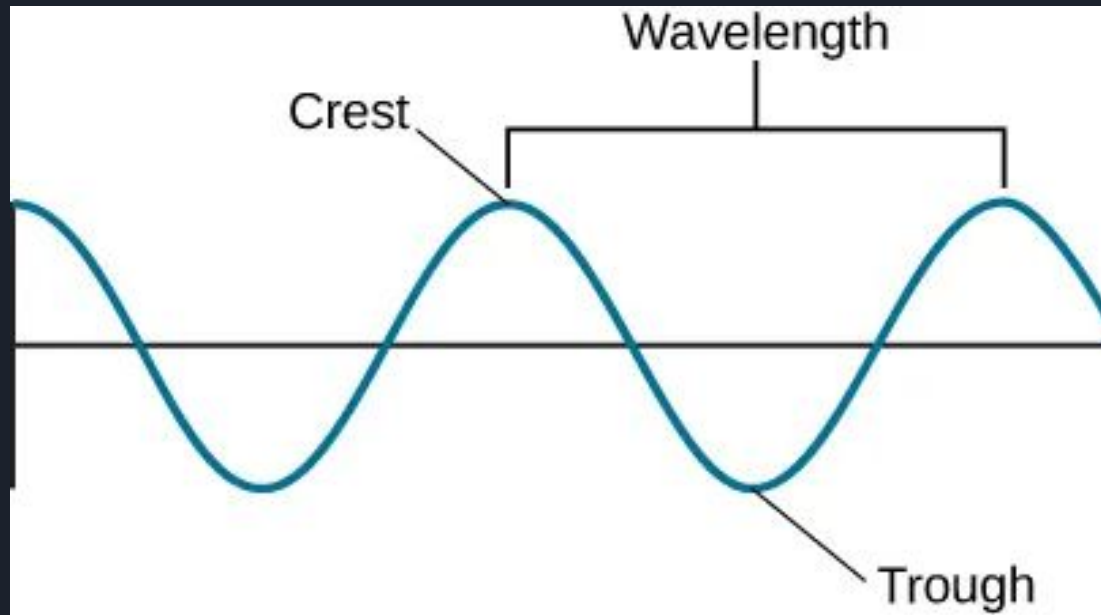


Quick Grammar Lesson!

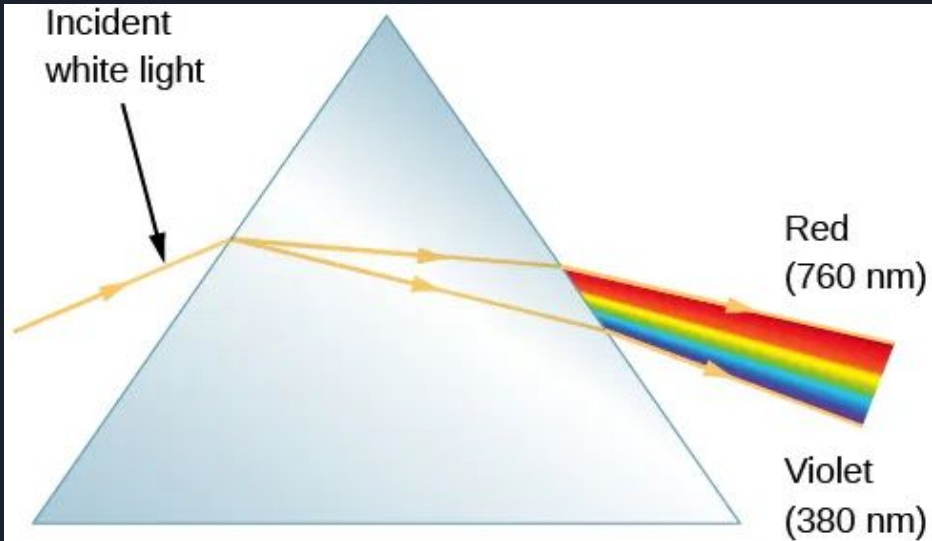
You can have:

- One spectrum
- Several spectra

Review: What is a wavelength?

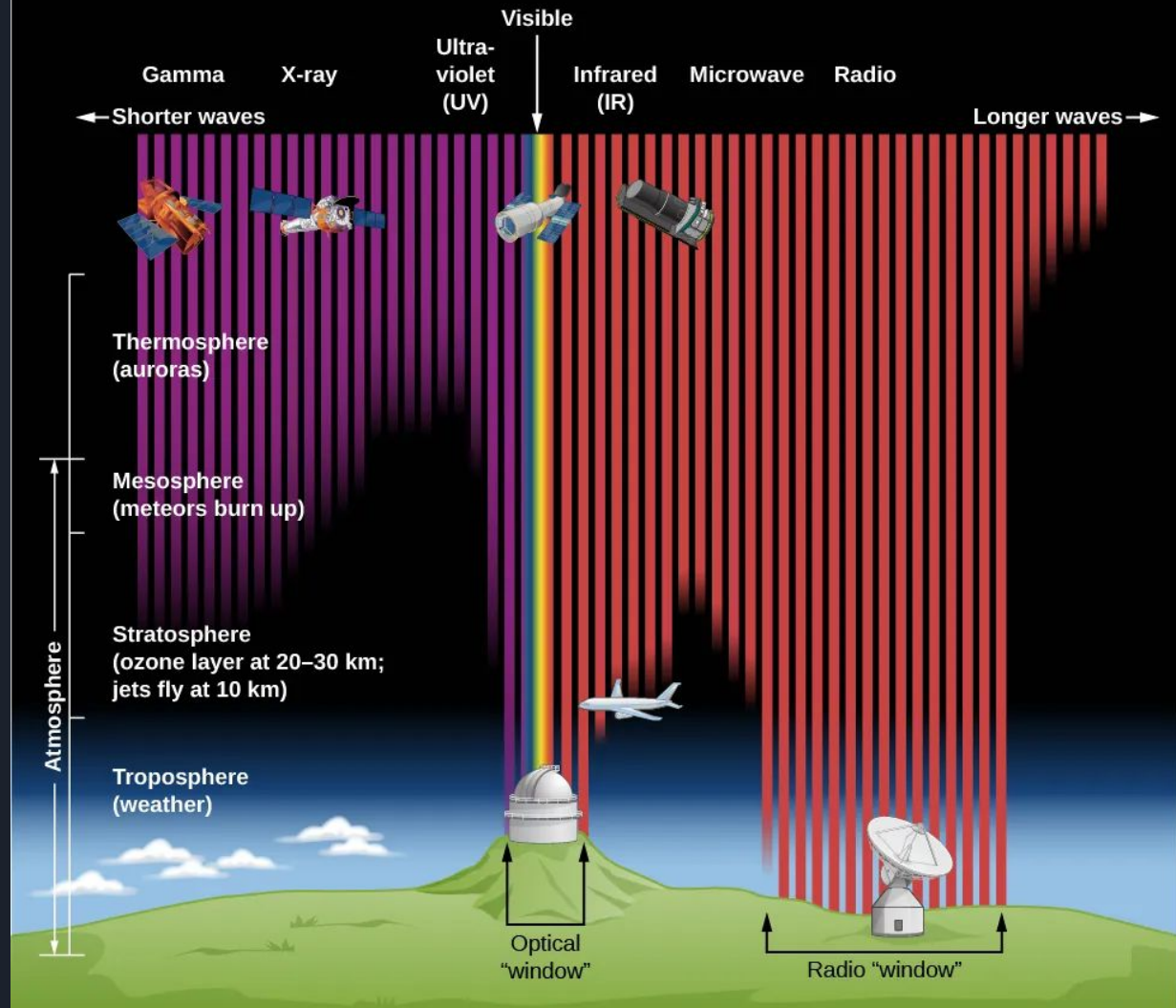


Splitting Up Light

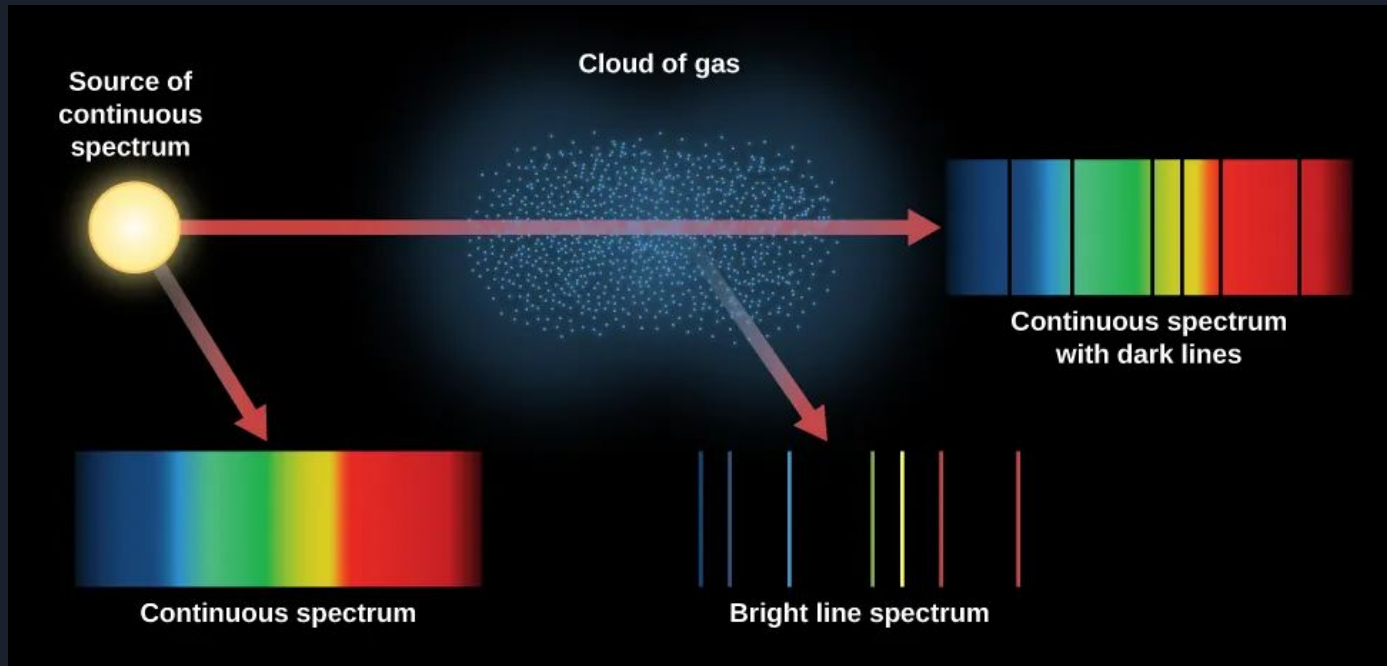


Sir Isaac Newton experimenting with a prism. Engraving after a picture by J.A. Houston, ca. 1870. Courtesy of The Granger Collection, New York

The Electromagnetic Spectrum



Types of Spectra



Elements Glow at different wavelengths

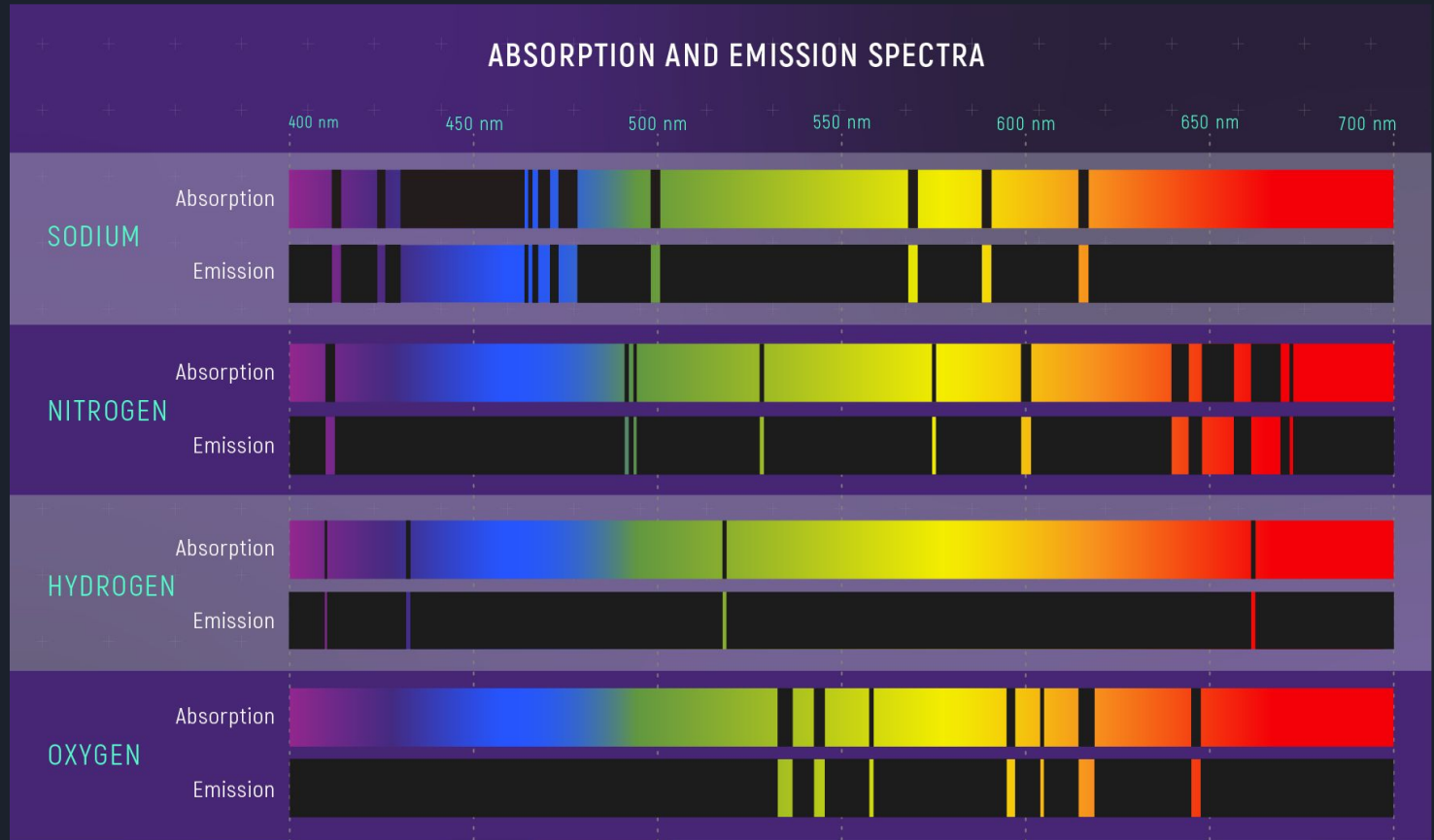


Image Credit:
<https://science.nasa.gov/asset/webb/absorption-and-emission-spectra-of-various-elements/>

Ladies of the Harvard Observatory




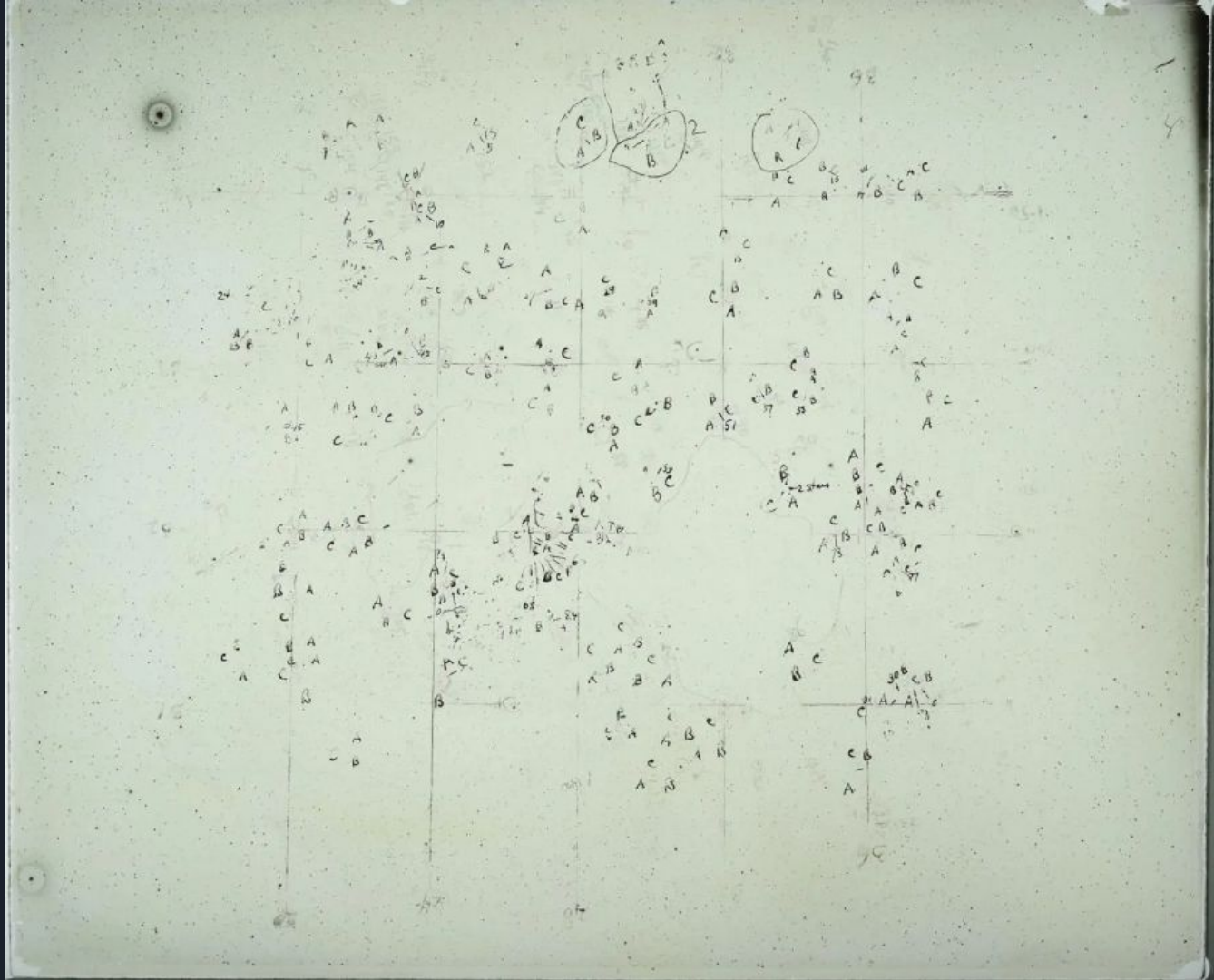
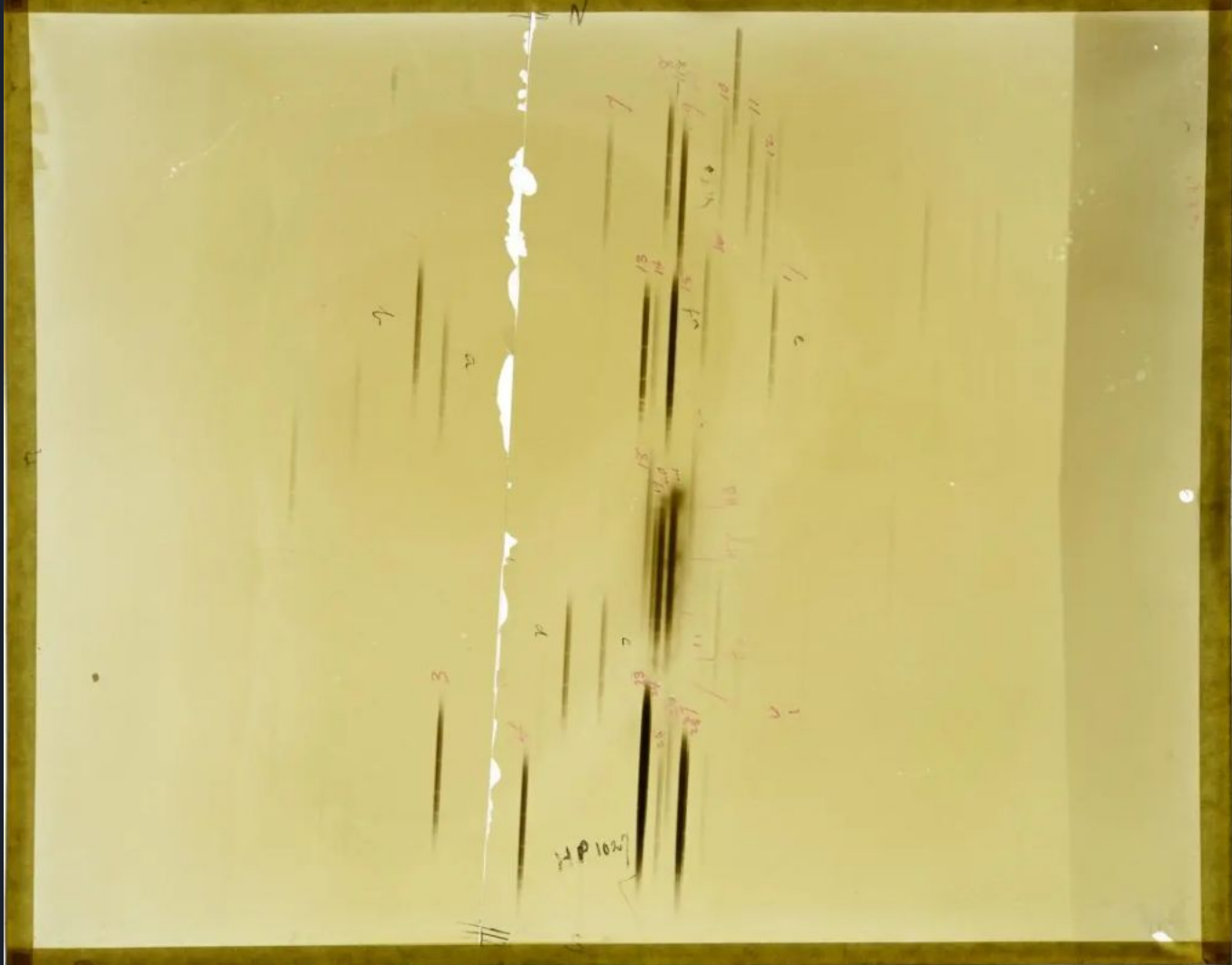
 COURTESY OF HARVARD UNIVERSITY ARCHIVES - Annie Jump Cannon was among a small contingent of women who were employed as "computers," analyzing countless photographic plates that had been collected from various astronomical outposts.

Image Credit: Harvard
StarGlass

<https://starglass.cfa.harvard.edu/plate/a02673>





1001 P 1027

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Williamina Fleming's Classification System

- Based on thickness of Hydrogen lines
- Used the letters A through O
- A stars
 - Thickest hydrogen lines
- O stars
 - Thinnest hydrogen lines
- P for Planetary Nebula
- Q for Unclassifiable



Annie Jump Cannon's Classification System

- Based on temperature
- Kept many letters from Mrs. Fleming's Classification System
 - Dropped some as necessary
- OBAFGKM
 - O is the hottest star type
 - M is the coolest star type



Classification System Mnemonics

Original

Oh

Be

A

Fine

Girl

Kiss

Me



Classification System Mnemonics

Original

Oh

Be

A

Fine

Girl

Kiss

Me

Newer

Only

Bad

Astronomers

Forget

Generally

Known

Mnemonics

O6.5

B0

B6

A1

A5

F0

F5

G0

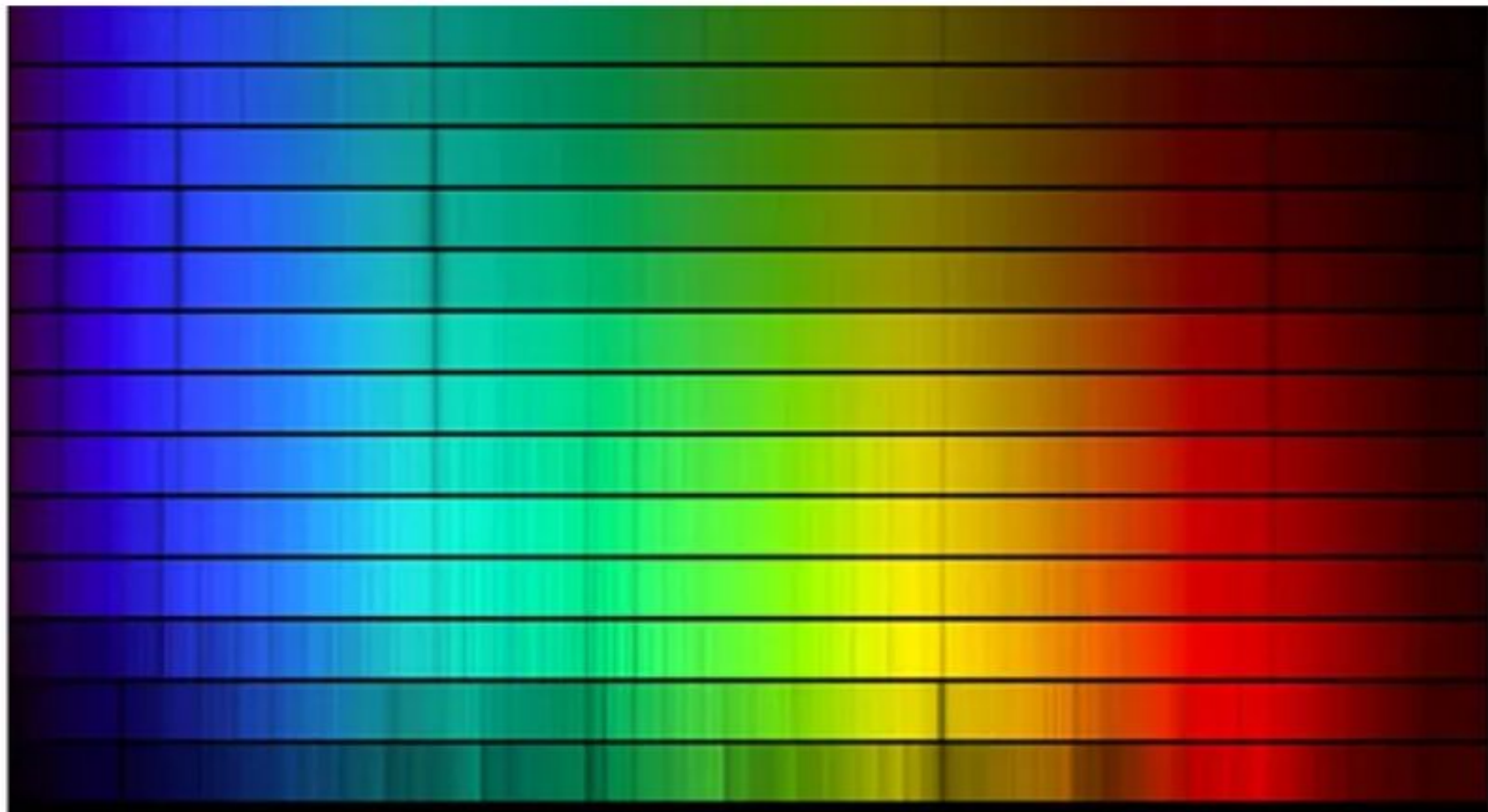
G5

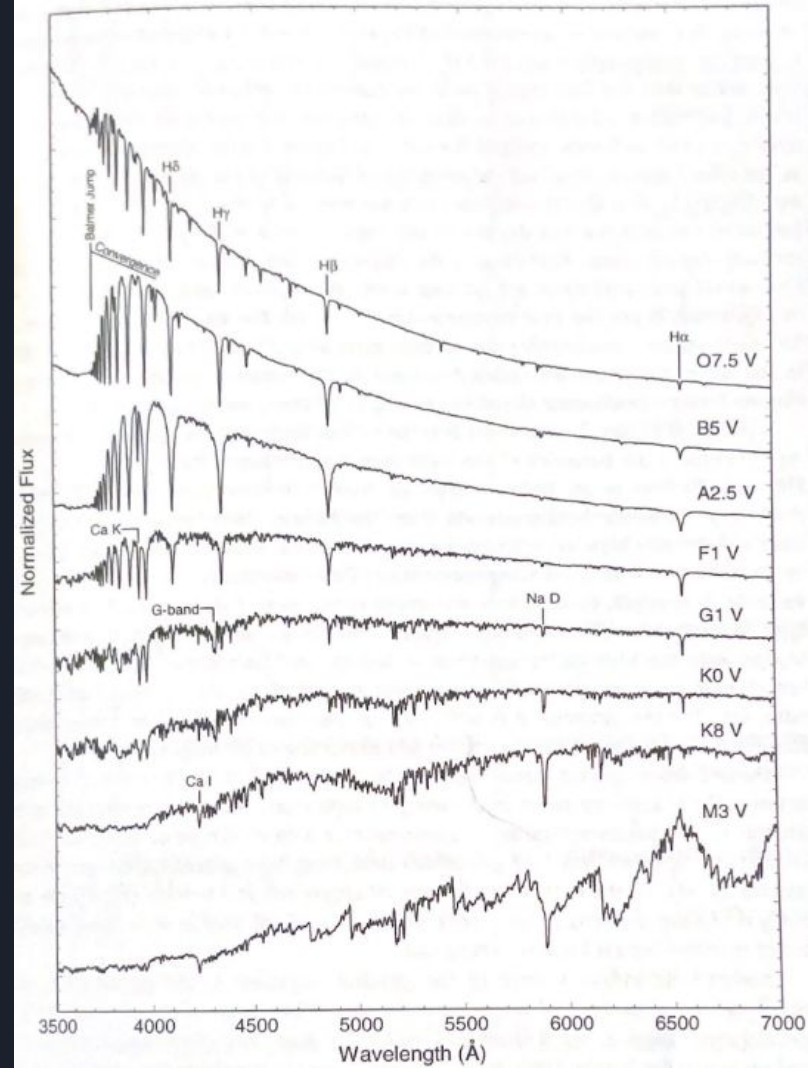
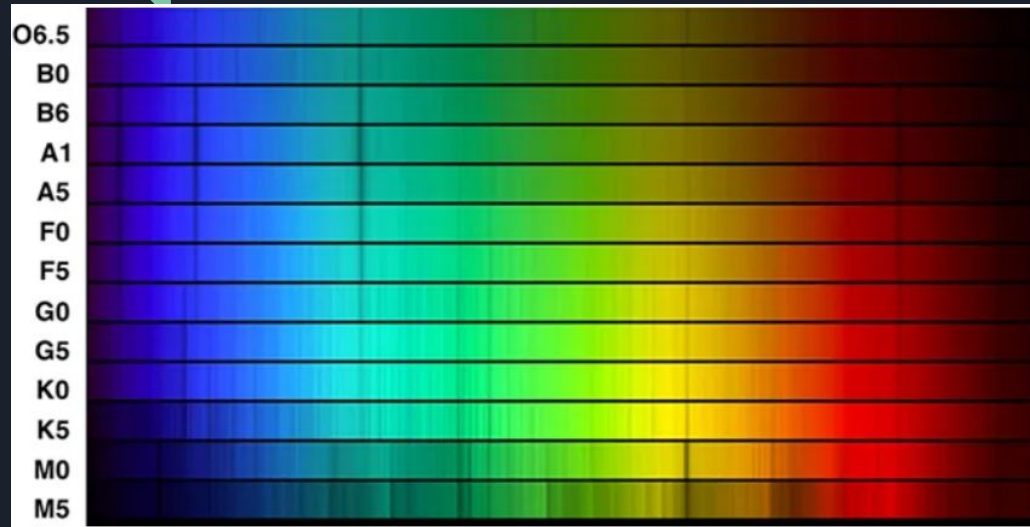
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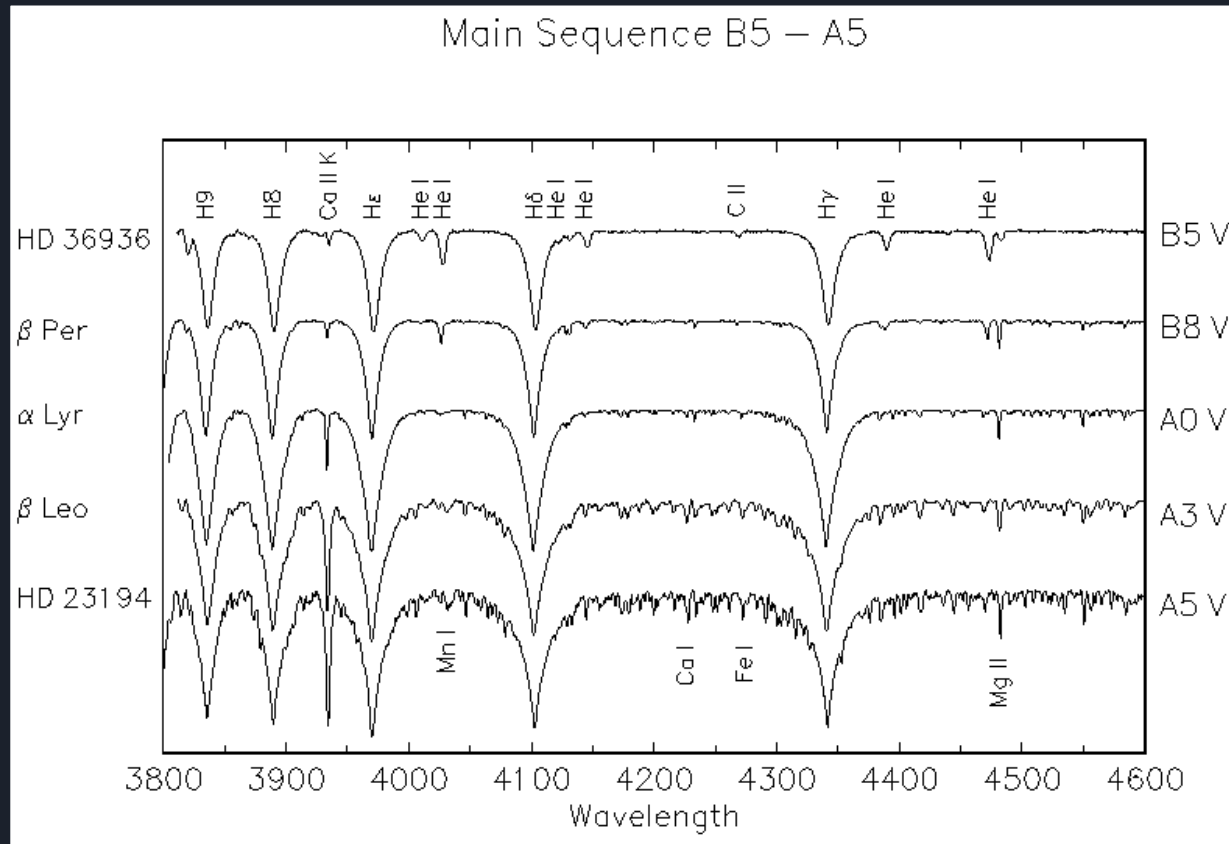
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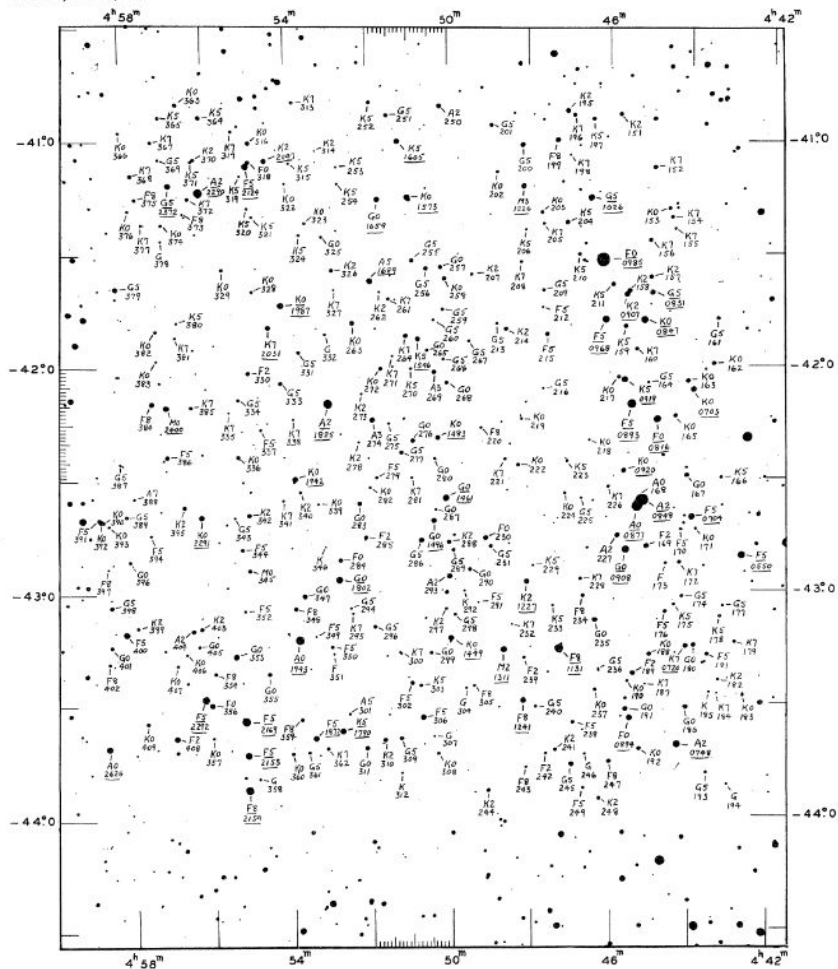
Subdividing the Classes



H.D. 30550-32626
H.D. 272,151-272,409

CANNON. HENRY DRAPER CHARTS OF STELLAR SPECTRA

CHART I



25 PREC.
α 0.8
6 ± 2'

S O U T H

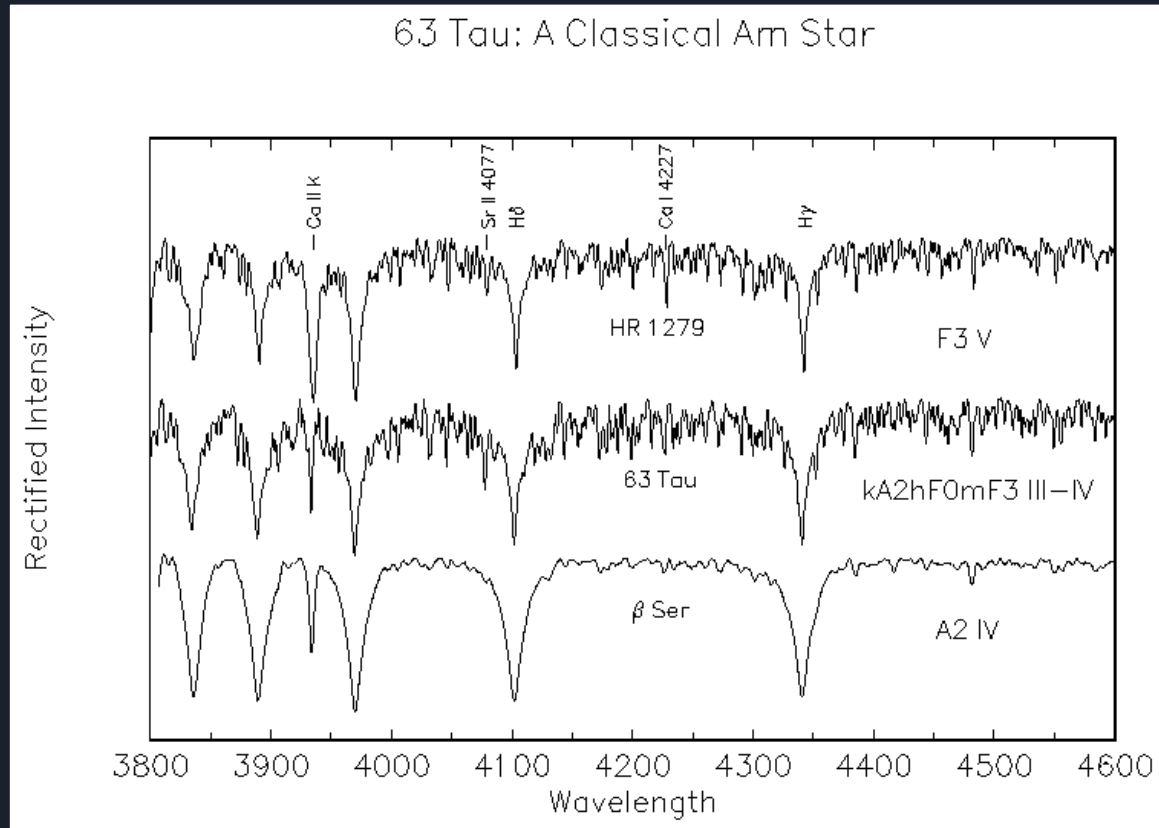
EPOCH 1875



Why do we care

- Can get unique information about each star
 - Temperature
 - Radial Velocity
 - Is there more than one star?

Spectra Can Get Complicated



Spectra Can Get Complicated

