

## Hertzsprung-Russell Diagram—key to understanding properties of stars. 30 Sept



Annie Jump Cannon  
1863-1941



Einar Hertzsprung  
1873-1967


www.ustralis.gov.au/okazowski/Astronomer/Hertzsprung.html



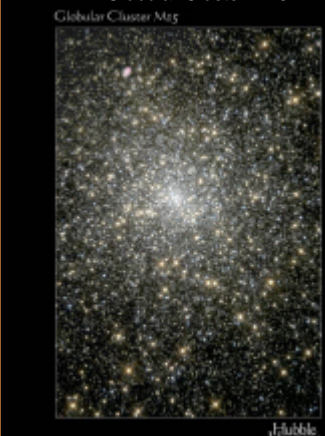
Henry N Russell  
1877-1957

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Orion Constellation



Globular Cluster M15

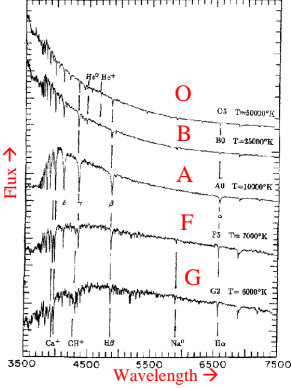


Hubble Heritage Team (STScI/ESA), Hubble Space Telescope/WFPC2 (STScI/ESA)

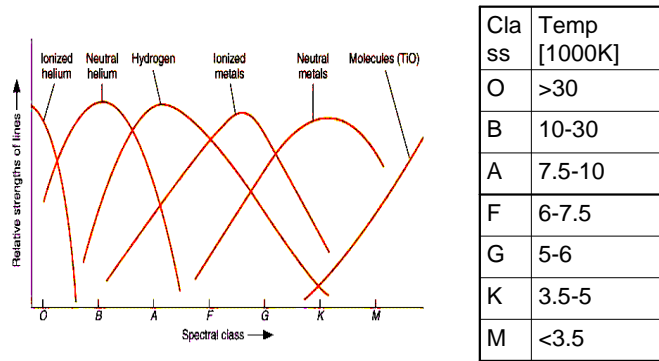
- You are a young astronomer in 1890, and you want to study stars. The distances to a few dozen stars are known. How do you attack this problem?

## Spectra of Stars

- Spread light by color
- Each element has characteristic colors (called lines)
- Classify stars by their spectra.
  - Originally by strength of hydrogen lines
    - ABCDEFGHIJKLM
  - Now in order by temperature
    - OBAFGKM
    - October Brings A Football Game; Kill Michigan — Emy Ibrahim
    - Our Blessings Are From God's Kingdom Majestic — Latoya Baker

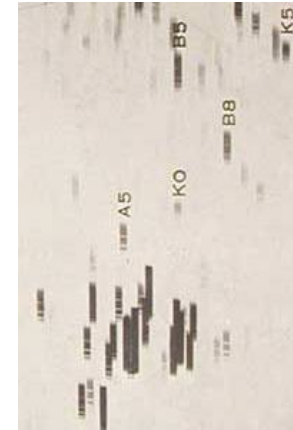


## A temperature sequence



## Draper Catalog

- 250,000 stars with classifications



## Annie Jump Cannon

AJC

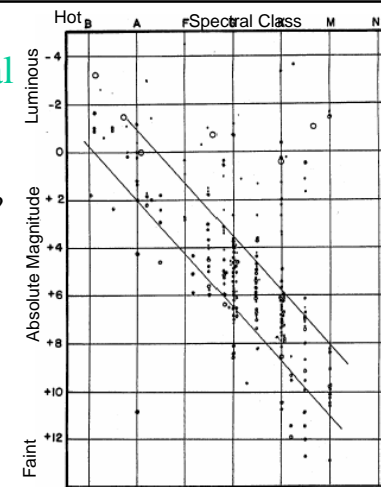
- Annie Jump Cannon devised the spectral classification.
- AJC
  - BA, Wellesley, 1884
  - Pickering's assistant, 1896
  - Henry Draper catalog of stars, 1918-1924
  - Astronomer 1938



Pickering's team 1913; from Barbara L. Welther, 1982, Isis 73, 94.

## Russell's Original H-R Diagram

- Are color and luminosity unrelated?
1. Is a hot star as likely to be luminous as faint?
  2. What characteristics of stars does the H-R Diagram reveal?



Astrophysics and twentieth-century astronomy to 1950, O Gingerich, ed., Cambridge, 1984