



Capturing the Stars: Early 20th Century Astronomical Photography and the Material Legacy of Yerkes Observatory

Yerkes Observatory, located in Williams Bay, WI, was a leader in the study of astronomy and astrophysics throughout the 20th century. Our effort aims to reveal the research methods and hidden labor of Yerkes' early years, focusing on the processes and people who built its legacy and worked to explain our Universe. You can learn more about Yerkes at yerkesobservatory.org.

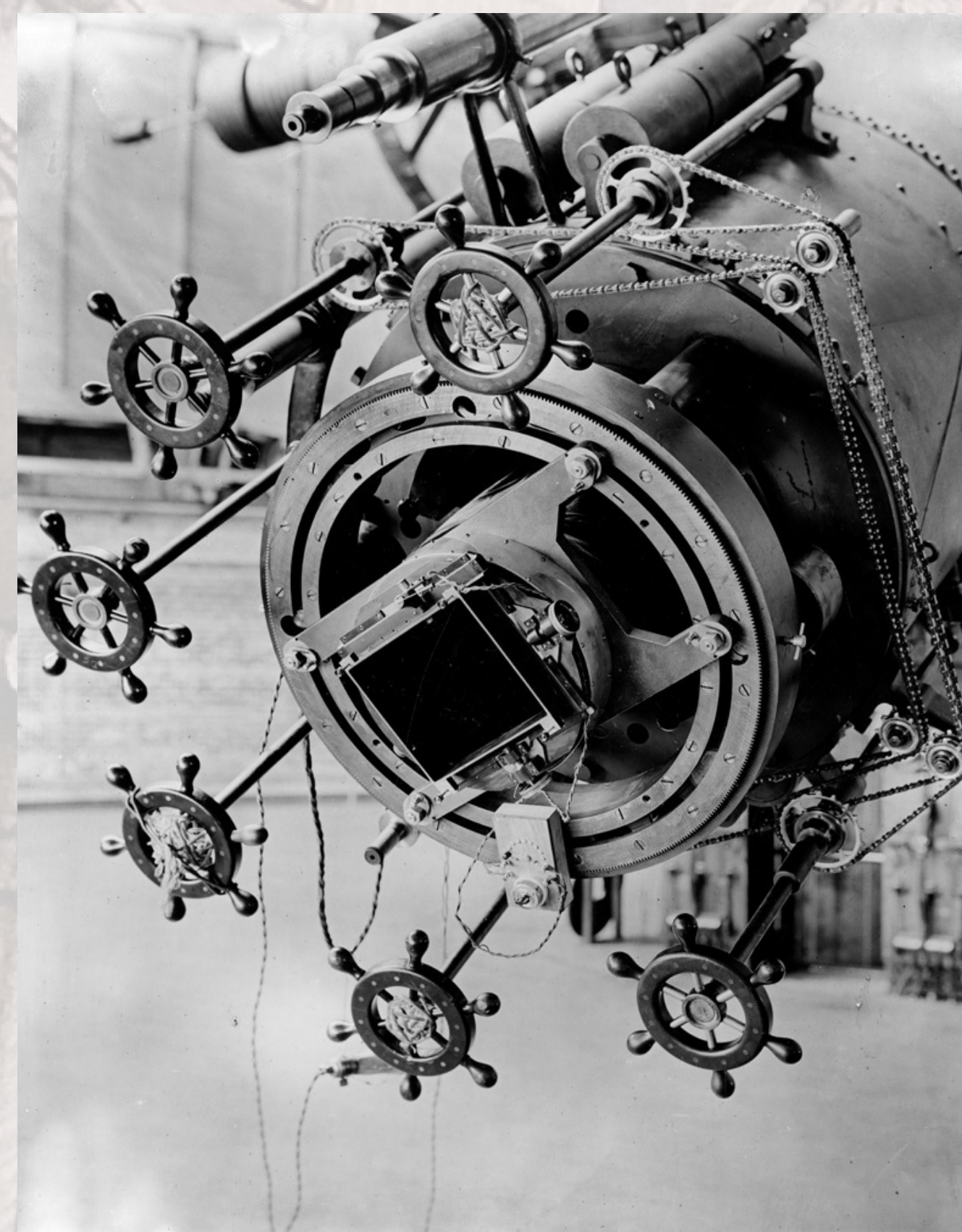
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Our Research Questions

- What were the different kinds of labor at Yerkes and how do they relate to different tasks related to astronomical research?
- How were the tools of early 20th century astronomy used?
- What was it like for women to work and study at Yerkes Observatory?

Observation and photography



What was being observed?

How did one take a picture through a telescope before digital cameras?

What are the steps in making a glass plate?

What were these plates used for?

Can I still look through a telescope like this somewhere?

University of Chicago Photographic Archive, apf208725, Hanna Holborn Gray Special Collections Research Center, University of Chicago Library.



Above: Undergraduate student Olina Liang looks through the 40" refractor at Yerkes Observatory, 2020.

Right top: Various contemporary prints from glass plate negatives dry in the darkroom at Yerkes Observatory.

Right bottom: Image of Saturn, taken on film in September 2022 with the 40" refractor and original telescope camera attachment at Yerkes Observatory.



Measurements



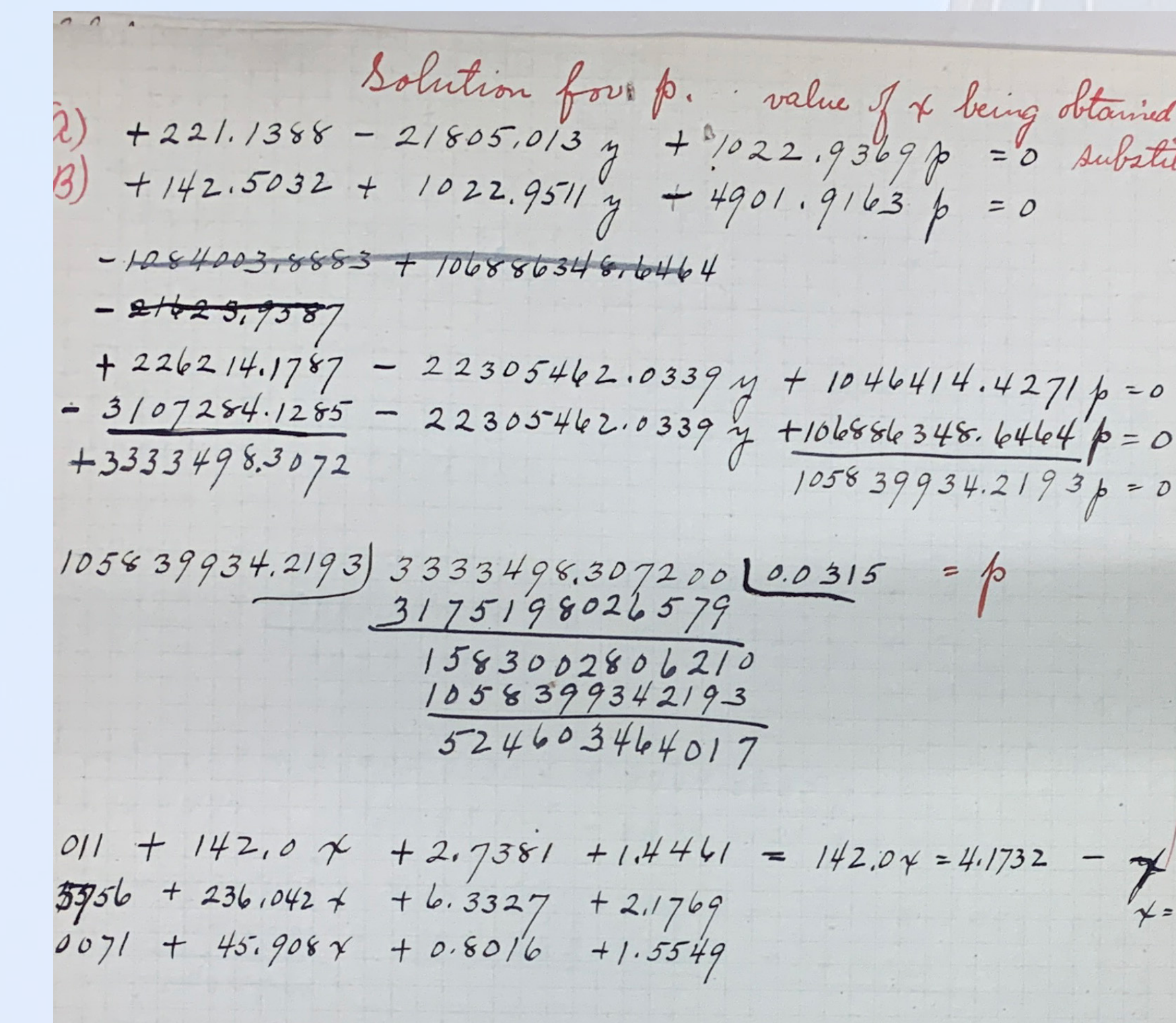
Who was using the measuring machines?
What were they measuring?
How do measuring machines work?



Left: Undergraduate students Sophie Poff and Isaiah Escapa work with the Zeiss blink comparator at Yerkes Observatory.

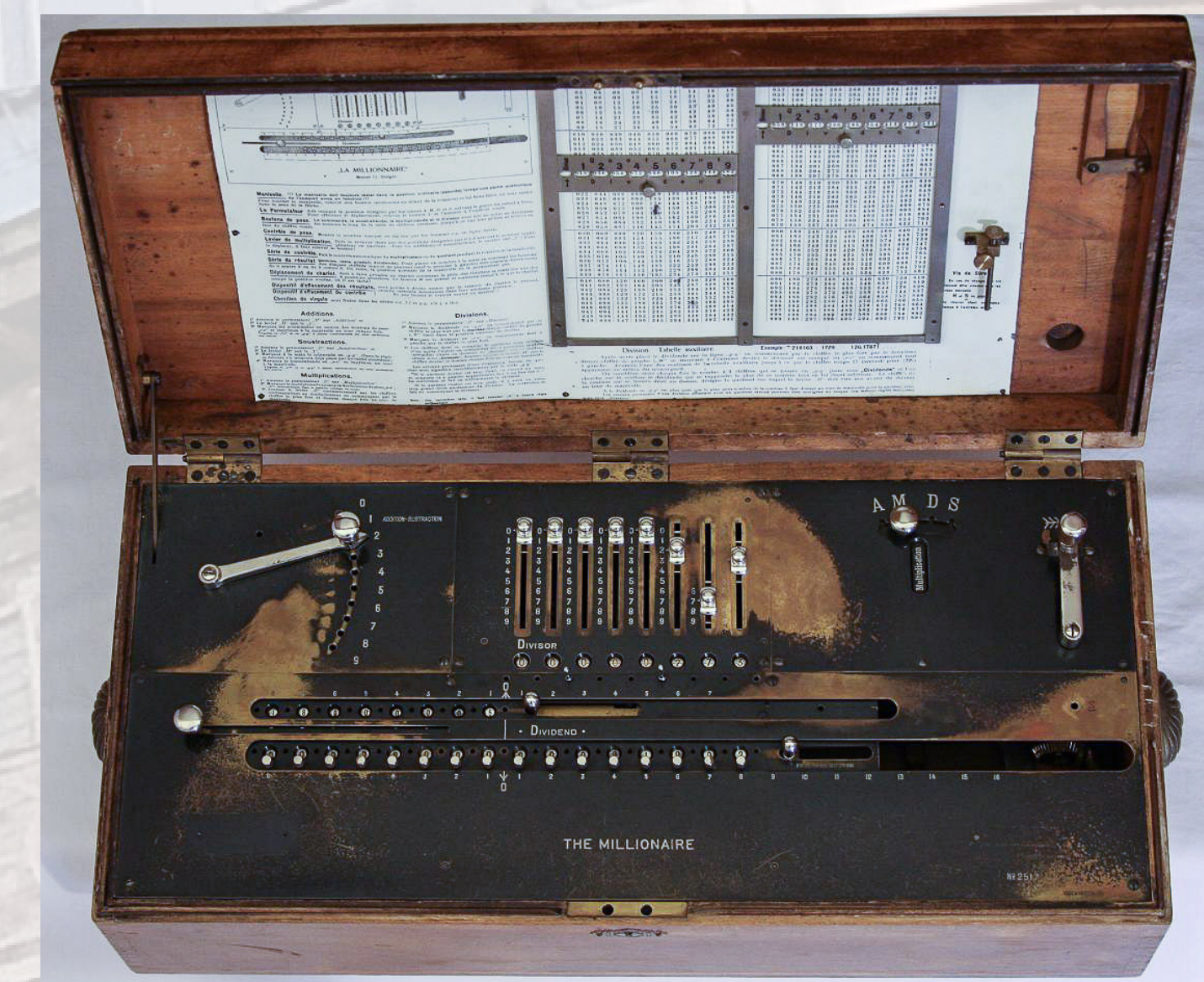
Above: Dorthea Klumpke Roberts at a measuring machine with several other women. Paris Observatory, 00002373.

Calculations



Above: Page of calculations related to work being done on 61 Cygni. Barnard. Edward Emerson. Papers, Box 2, Folder 2, Hanna Holborn Gray Special Collections Research Center, University of Chicago Library.

Right: Millionaire Measuring Machine (Egli Switzerland) similar to the model used at Yerkes Observatory. Photography by Ezder.



What was being calculated?
Who was doing the calculating?
What were their qualifications?
How were calculations used?

Vera Gushee's DIY telescope!

"... a few hours pleurably and profitably spent. ...will prove especially helpful to all who are beginning the study of Astronomy." Scientific American, July 28, 1918

Who was Vera Gushee?
How was this telescope built?
What could the telescope observe?



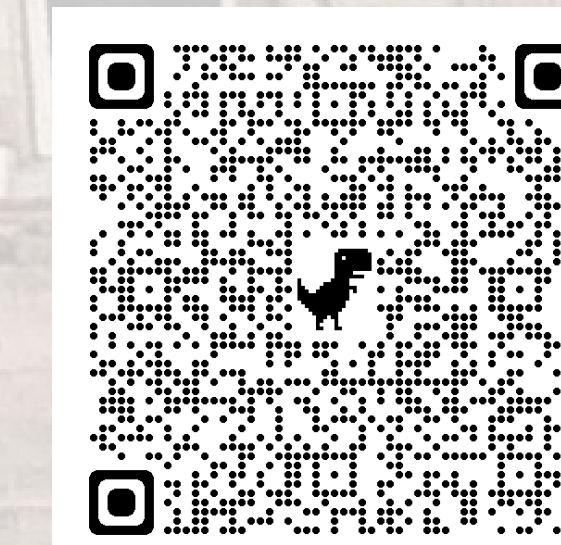
Image to right: Staff of Yerkes in 1921 with Albert Einstein (men grayed out). University of Chicago Photographic Archive, apf600415, Hanna Holborn Gray Special Collections Research Center, University of Chicago Library.

Left to right: Moon in 1911 photographed by Fredrick Slocum, Vera Gushee (left) and Elsie Johns, and Gushee's homemade telescope. University of Chicago Photographic Archive, apf601009r, apf604188, and apf601360, Hanna Holborn Gray Special Collections Research Center, University of Chicago Library.

Digital applications



See the networks of some of the women working at Yerkes in the early 1900s



Visit the Glass Plates Collection at the UChicago Library website



What's next?

- Continued research on calculating methods.
- Continued research on how different types of measuring machines were used.
- Continued exploration of participation of women at Yerkes in scientific research.
- Fall 2023 exhibition on Women at Yerkes at UChicago Library.