A Historical Walk Through Atomic Theory

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Who am I?

↠ Junior @ University of Rochester
- ⇢ Physics & Astronomy Major
- ⇢ Music Minor

↠ From Tampa Bay, Florida

↠ Lifelong library lover

↠ CHP/NBLA intern
- ⇢ Focus on improving visibility of underrepresented physicists in history and today

MJ with NBLA's bust of Niels Bohr.

What Did I Research?

Atomic Theory...

From Ancient Greece until the mid-20th century, the development of atomic theory played a key role in much of the study of physics.

Underrepresented Physicists...

Racial, ethnic, and gender minorities struggle to receive recognition, both in history and today. I sought to bring marginalized voices from the past to light and increase visibility of modern-day underrepresented scientists.

And More!

From finding books on optics and light, to writing popular physics trivia, to the finer points of Google Maps.

What Did I Do?

My work, presented through the history of atomic theory.

I wrote: a blog post—"Atomic Theory in Antiquity"— for *Ex Libris Universum*, NBLA's blog.

~415 B.C.E.

Democritus

The "laughing philosopher;" first to propose a theory of atoms

J.J. Thomson

Discovered cathode rays (later named electrons) are inside of atoms, proving electrical involvement.

1896

Thomson (L) and Rutherford (R).
Courtesy AIP Emilio Segré Visual Archives.

Ernest Rutherford

Discovered the atomic nucleus with his gold foil and α particle experiment.

1909

1801

John Dalton

Different types of atoms make up different types of materials

1909

Robert Millikan

Quantized the charge and mass of an electron with his oil-drop experiment.

I made: a teaching guide– "Evolution of Atomic Theory"– for CHP.

Henry Moseley

Reorganized the periodic table by nucleic charge, not atomic mass.

1913

Erwin Schrödinger

Expanded on Niels Bohr's quantum consideration of the atom by representing electrons probabilistically.

1926

Jane Dewey, Elizabeth Laird, and James A. Harris (L).
Courtesy AIP Emilio Segré Visual Archives and Digital Photo Archive, Department of Energy (DOE).

1913

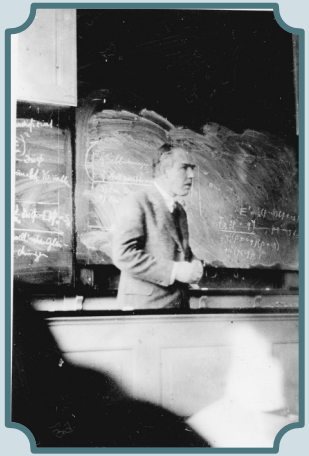
Niels Bohr

Remade the standard atomic model to have a nucleus surrounded by electrons in orbits.

I wrote: An article on three relatively unknown individuals (above) from the development of atomic theory for CHP's November Newsletter.

A blog post for *Ex Libris Universum* about the process for finding these physicists.

Niels Bohr lecturing in Copenhagen.
Courtesy AIP Emilio Segré Visual Archives.



The greatest opportunities for study were research fellowships in the laboratories of the best-known physicists of the time. Jane Dewey (previous slide) studied with Niels Bohr (left).

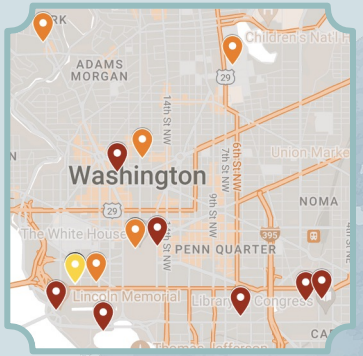
1930s

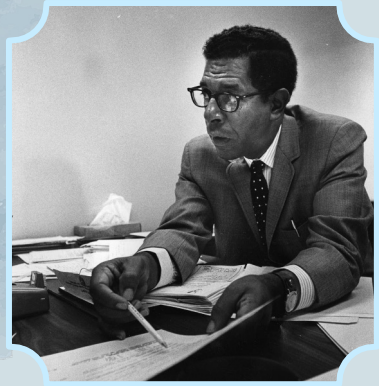
1930s

Quantum Mechanics

Internationally, quantum mechanics and a quantum understanding of the world overtook pure atomic theory.

I made: the August Photos of the Month post for *Ex Libris Universum* with an interactive map (right).





Charles Anderson at his desk.
Courtesy University of Wisconsin - Madison.

1941

End of WWII.

1945

Anderson receives his Ph.D. in meteorology, the first Black individual to do so.

1960

Charles E. Anderson

A meteorologist and atmospheric chemist who trained U.S. Air Force members with the Tuskegee Airmen.

I made: a teaching guide– "Meteorological Forecasting like a Tuskegee Airman"– for CHP.

Advancements in optics and light theory—the creation of the laser!

1960s

SPS interns at Wikipedia Edit-a-Thon.

Now

My book displays at NBLA.

I did: Book displays on optics and light (right)!

Wikipedia Edit-a-Thon (above) for SPS interns!

Extended project acquiring headshots for still-living physicists on Wikipedia!

All in All, I...

Grew Research Skills

I learned more about working with archival material and improved my individual research abilities.

Read New Material

Both online and in hard copy, I was exposed to important and interesting physics writing.

Made Connections

I had incredibly valuable conversations both with coworkers at AIP and with other physicists.

Wrote a Lot!

I was able to improve my scientific and general writing skill through article and curriculum construction.

Thank You!

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find my work at/in:
aip.org/ex-libris
aip.org/history-programs > Teaching Guides
CHP's November Newsletter
NBLA!