

THE PHOTOGRAPHIC LUNAR ATLAS

The Beginnings of Modern Lunar Study

by: Jim Thompson
date: February 2015

Our Closest Neighbour...Once A Stranger



Image by: J. Thompson

- Close telescopic study began early 17th century (after Galileo)
- Most efforts into 20th century involved mapping & naming of features (selenography)
- Little to no research into geology of the Moon or how it was formed

Many scientists believed craters were volcanoes until the late 20th century!

(US) Space Science Gets A Kick In The Pants

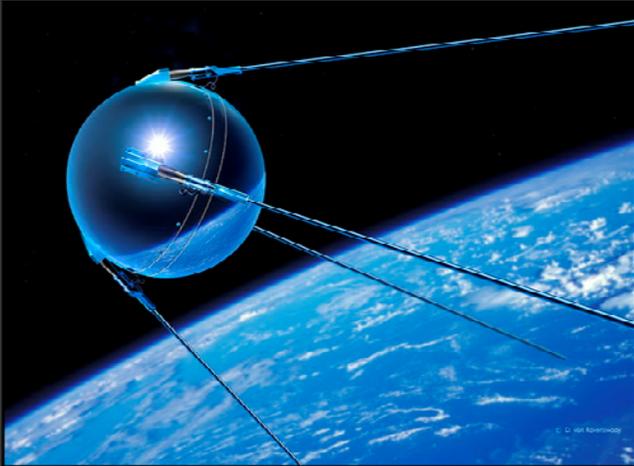


Image by: D. vonRavenswaay



Image by: Mikaël Restoux

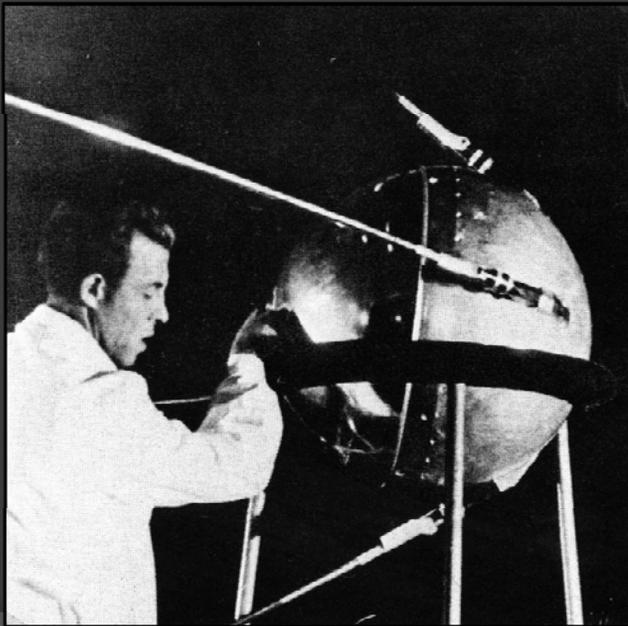


Image by: space.about.com

“Space Race” begins on
October 4th, 1957 with
USSR launch of Sputnik 1

U.S. Goes “All In”



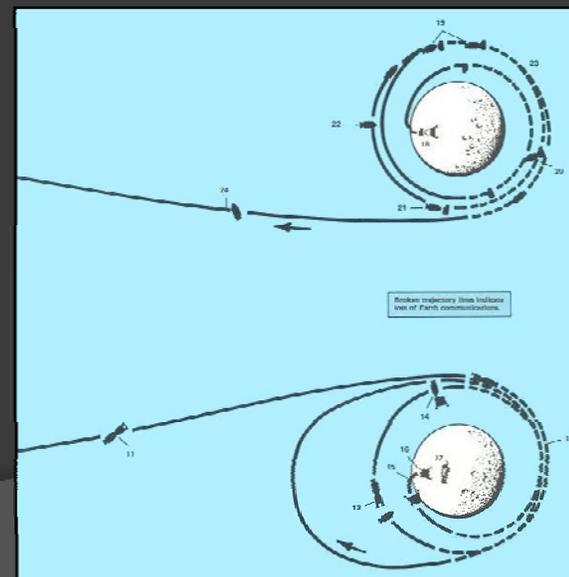
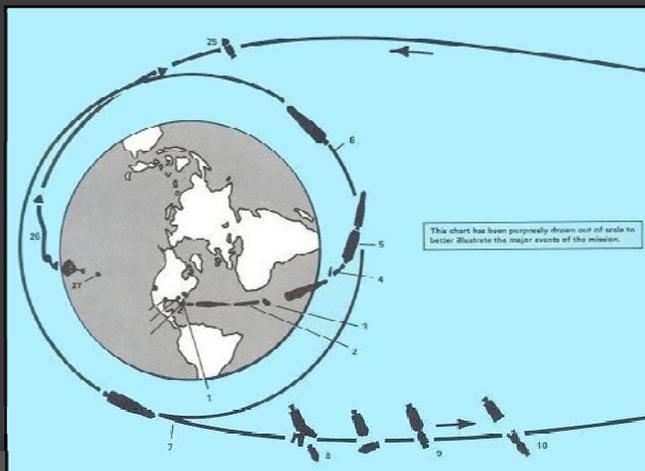
Image by: jfklibrary.org

JFK Before a Joint Session of Congress, May 25th, 1961

“First, I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish.”

Now What Do We Do?

- U.S.'s new commitment to landing a person on the Moon:
 - Brought to light lack of real knowledge about the Moon
 - Set a short time line (<10 years) for scientists to get up to speed
 - Provided funding necessary to do real research



Enter “Super Scientist”

● Gerard P. Kuiper (1905-1973)



Image by: McDonald Observatory

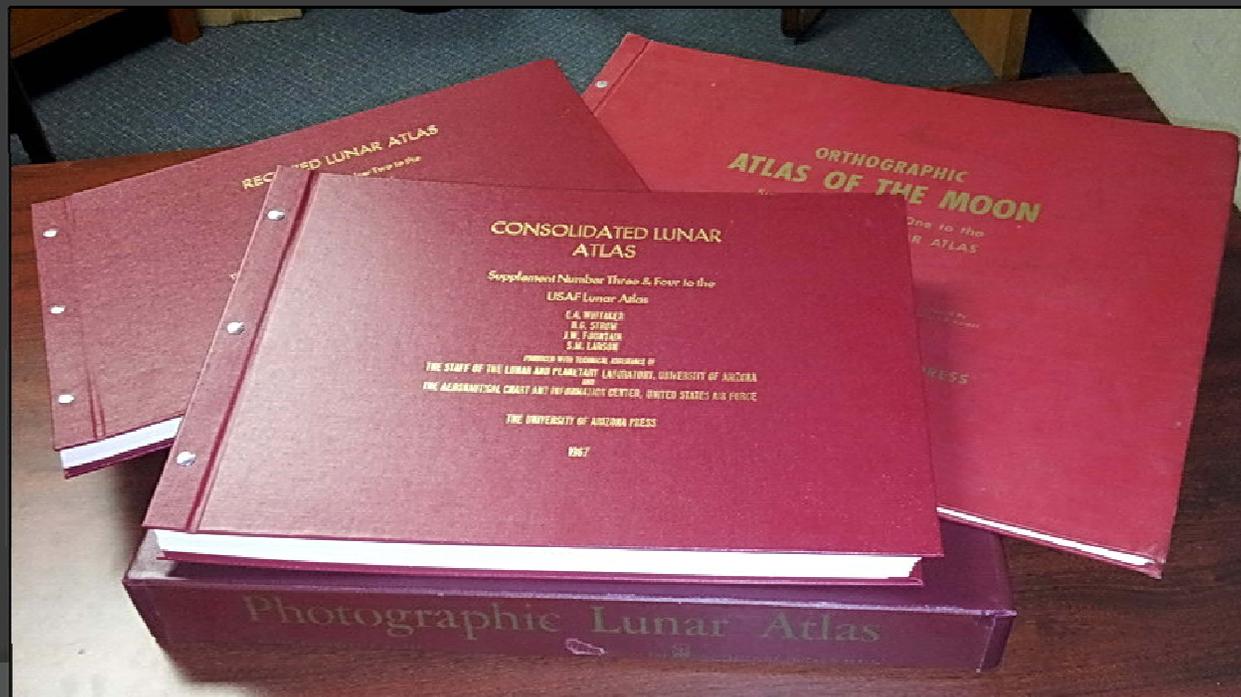
- Dutch born American astronomer
- Discovered moons Miranda (Uranus) & Nereid (Neptune)
- Discovered CO₂ in Mars atmosphere
- Discovered Titan's CH₄ rich atmosphere
- Pioneered airborne IR observing in 1960's
- First suggested existence of “Kuiper Belt”
- 2nd director of McDonald Observatory (after Otto Struve)
- Spent large part of career at University of Chicago (Yerkes Obs.)

Lunar & Planetary Laboratory is Born

- Kuiper came to Tucson in 1960 for greater independence & to be closer to world-class observatories in US SW
- LPL built as a community of scientists dedicated to solar system studies, including the Moon
- Actual knowledge of the Moon at the time was very limited – no-one studying!
- Kuiper convinced the USAF to fund a series of detailed photographic surveys of the Moon, starting in 1960.
- Objective was to publish series of comprehensive lunar atlases for use by researchers

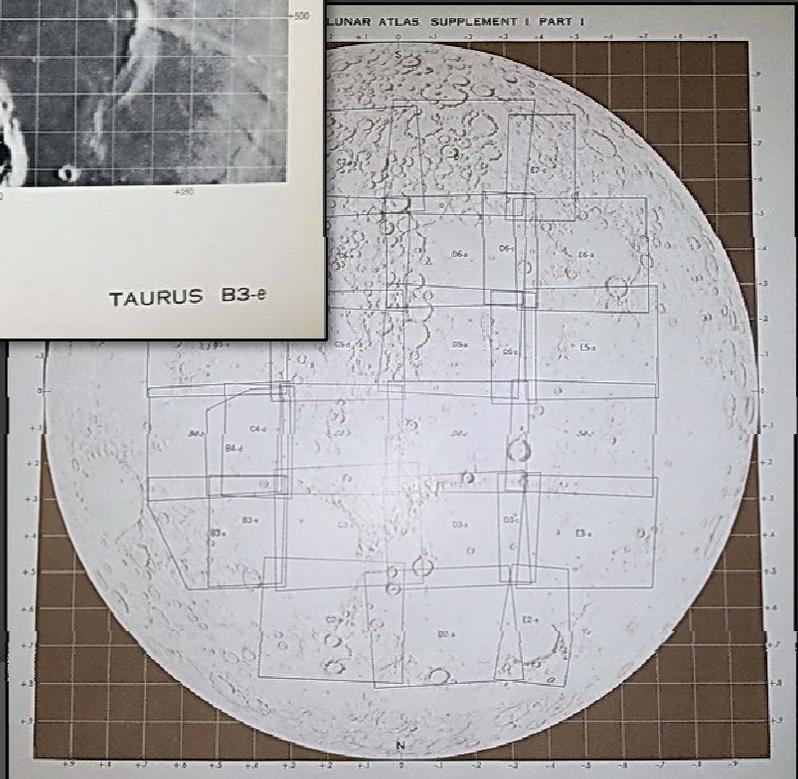
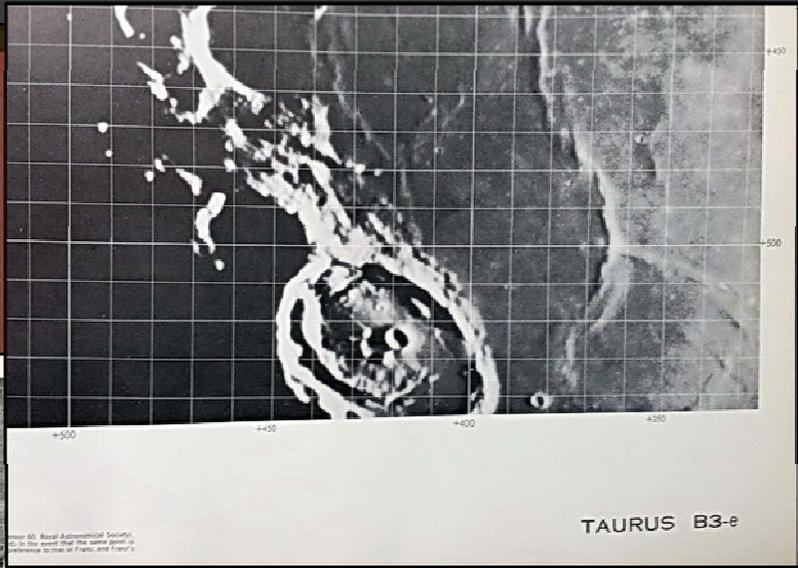
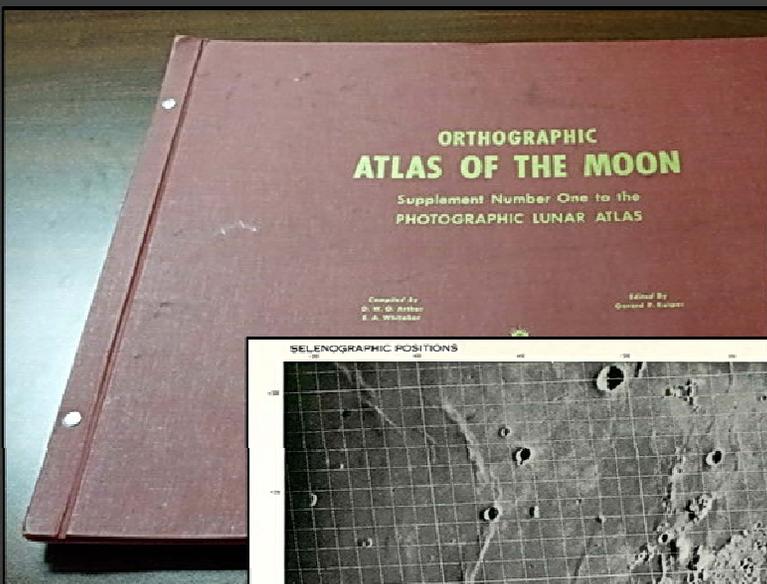
Kuiper's Photographic Lunar Atlas

- Series of 4 atlases were produced:
 1. Photographic Lunar Atlas
 2. Suppl. #1 Orthographic Atlas of the Moon
 3. Suppl. #2 Rectified Lunar Atlas
 4. Suppl. #3 & #4 Consolidated Lunar Atlas



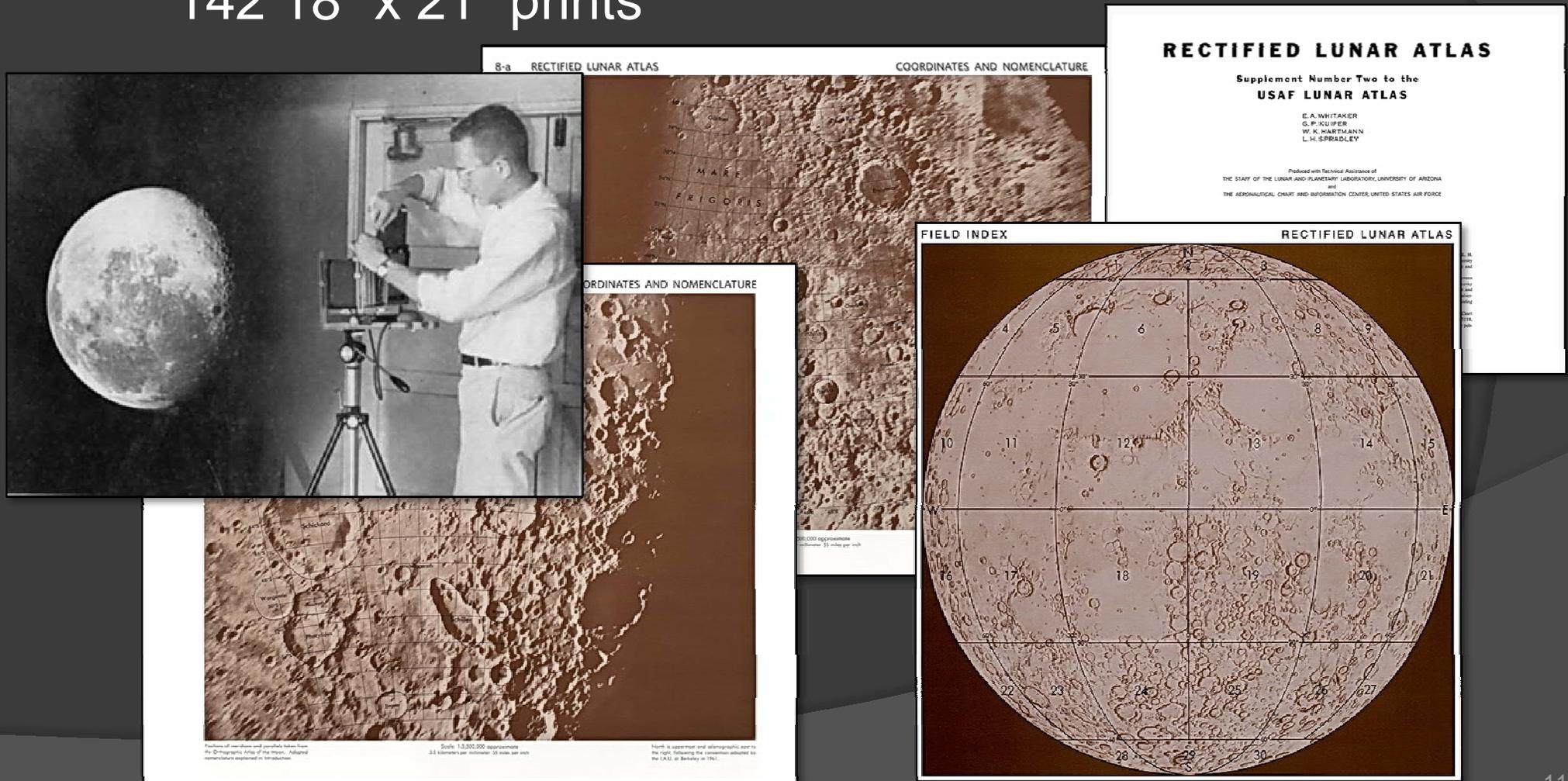
“Suppl. #1 Orthographic Atlas of the Moon”

- 1960, best photos in 44 fields from original atlas overlaid with a rectangular grid to allow accurate location of features, folio of 29 18”x21” prints



“Suppl. #2 Rectified Lunar Atlas”

- 1963, shows 30 fields of Moon as viewed from directly overhead, generated by projecting existing lunar photos onto 3' sphere and re-photographing, folio of 142 18” x 21” prints



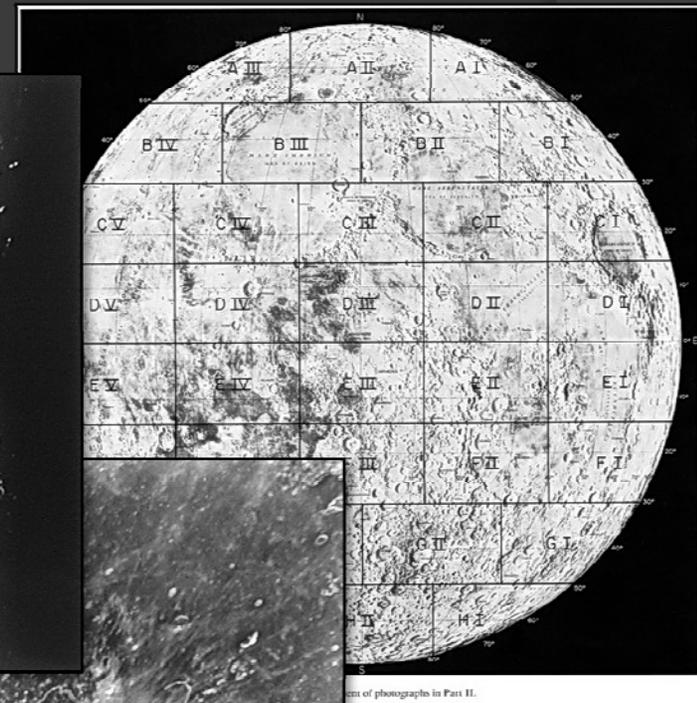
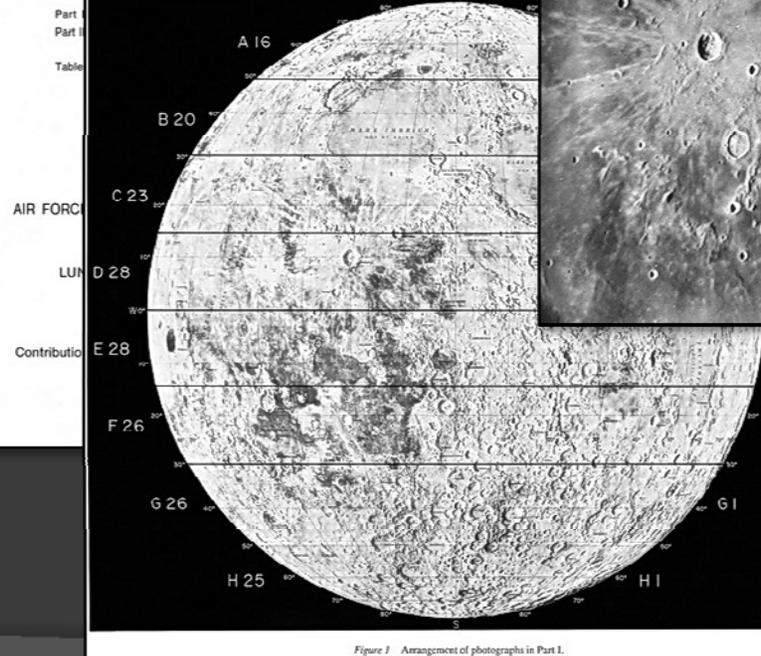
“Suppl. #3 & #4 Consolidated Lunar Atlas”

- 1967, systematic re-photographing of Moon with higher resolution under supervision of LPL (Catalina Obs., US Naval Obs.), box of 227 17”x21” prints

CONSOLIDATED LUNAR ATLAS

Supplement Numbers 3 and 4 to the
USAF PHOTOGRAPHIC LUNAR ATLAS

Gerard P. Kuiper Ewen A. Whitaker
Robert G. Strom John W. Fountain
Stephen M. Larson



Impact of Kuiper's Lunar Atlas'

- Provided a solid foundation upon which scientific research of the Moon could begin anew
- Developed technologies for rectifying lunar photos, new printing processes for better reproduction of photographic plates
- US Lunar Program heavily dependant upon these atlases and the work of the LPL
- Directly contributed to discoveries like fact that basins are impact features (Orientale)
- Still in use today: Astronomy Magazine, Lunar Wiki, many books & online articles

Where Are They Now?

1. **Photographic Lunar Atlas** – used book stores, online auctions; electronic version available at:

<https://www.lpl.arizona.edu/sic/collection/pla#>

2. **Suppl. #1 Orthographic Atlas of the Moon** – used book stores, online auctions

3. **Suppl. #2 Rectified Lunar Atlas** – used book stores, online auctions; electronic version available at:

<https://www.lpl.arizona.edu/sic/collection/rla#>

4. **Suppl. #3 & #4 Consolidated Lunar Atlas** – used book stores, online auctions; electronic version available from:

<http://www.lpi.usra.edu/resources/cla/>

<http://www.stellarum.de/ENGLISH/index.htm>

Summary

At a time when serious study of the Moon was just beginning anew, the work of Kuiper and his team at LPL was critical in advancing our present day understanding of our nearest neighbour.



Image by: NASA