



5TH IYNT 2017

INDONESIAN TEAM

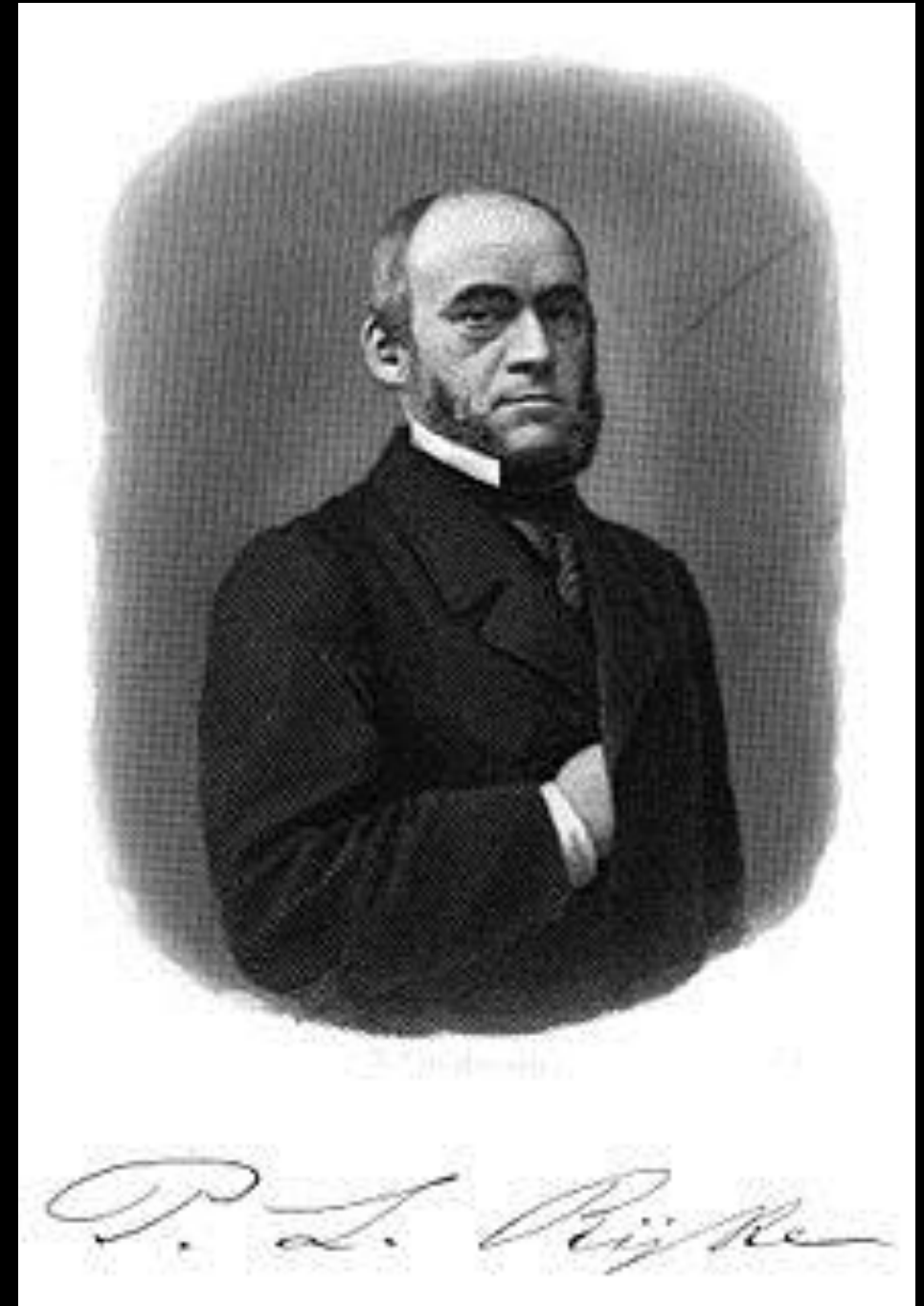
RIJKE'S TUBE

# PROBLEM

If air inside a vertical cylindrical tube open at both ends is heated, the tube produces sound. Study this effect.

# HISTORY

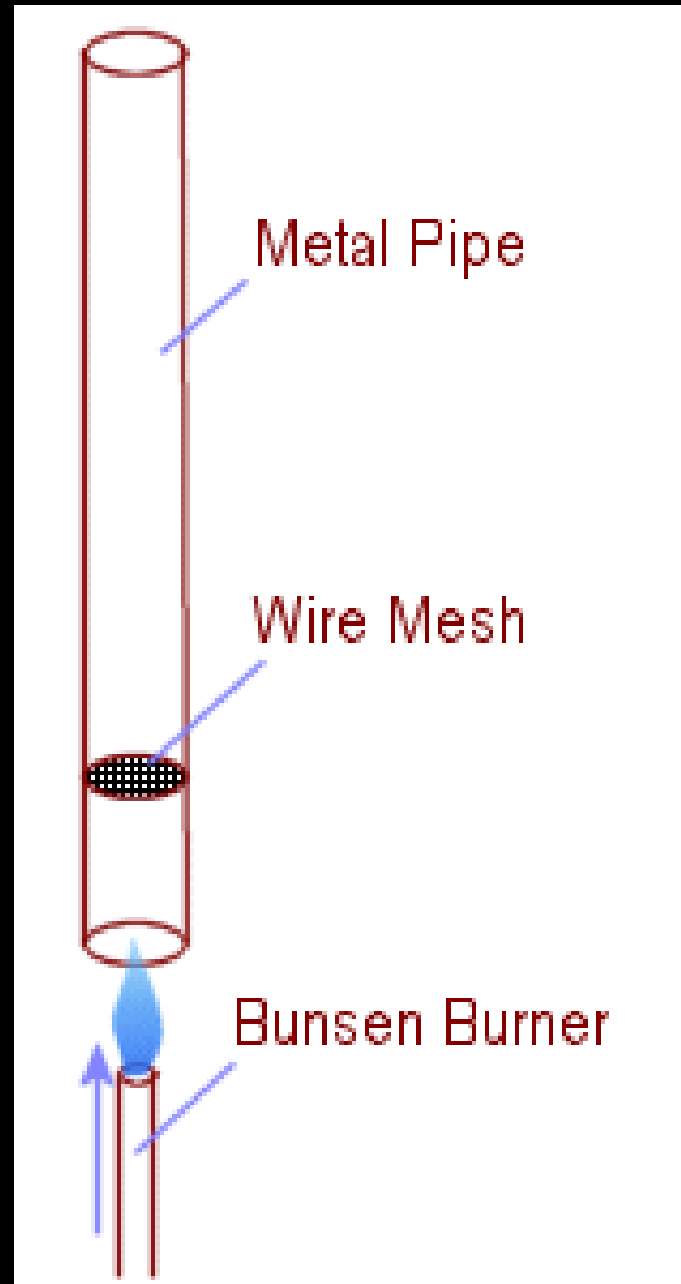
This Phenomenon was discovered  
by Peiter Rijke



# WHAT?

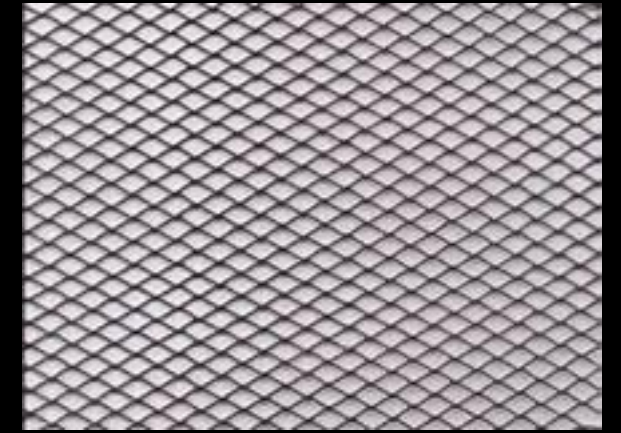
Rijke Tube is a phenomenon that concluded, heat could be changed into sound (**thermoacoustic**). This phenomenon could happen because of the **convection** happening inside the metal tube.

# DESIGN



MY STUDY

# APPARATUS



- 1. 0.5 m of metal pipe (with 5cm diameter).
- 2. 10x10 wire mesh.
- 3. 1 Bunsen Burner
- 4. 1 Scissors
- 5. 1 Cloth



# TABLE OF METHODS

- 1. Prepare all the materials that are needed.
- 2. Take the 0.5 m metal pipe, and measure the diameter.
- 3. With the measurements made cut the wire mesh based on its measurements.
- 4. Cut the wire mesh by its measurements of the metal pipe (3 copies).
- 5. Put the measured wire mesh, in the metal pipe.
- 6. After putting the wire mesh, prepare the bunsen burner.
- 7. Then, heat up the metal pipe to the bunsen burner.



# VIDEO DEMONSTRATION (SEMENTARA)



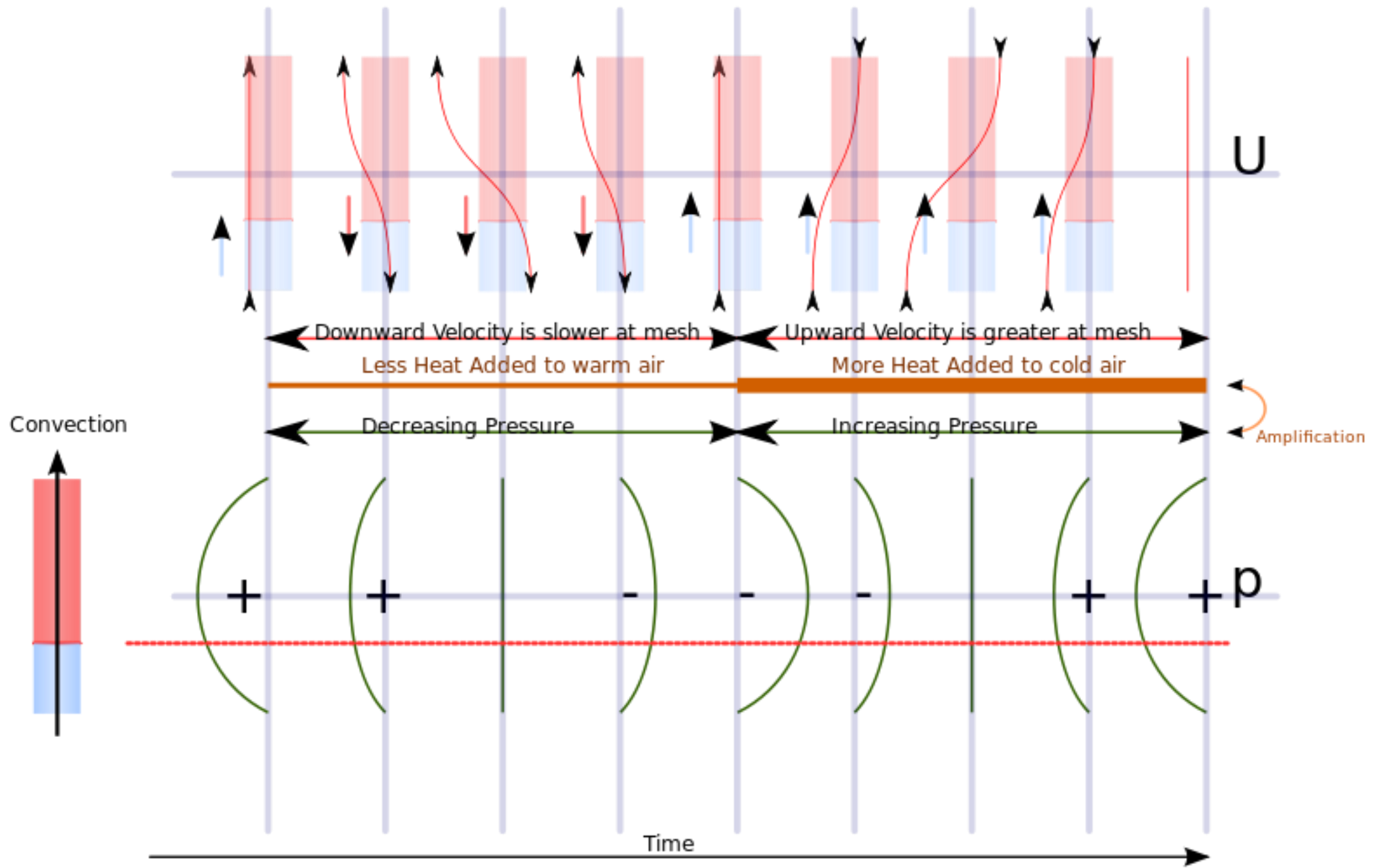
# WHY COULD THIS HAPPEN?

- Creating Self-Amplifying **standing wave** which **wavelength** is twice the length of tube. Giving a **Fundamental Frequency**.
  - Lord Rayleigh —> Upwards Motion because of Convection (Heated Gauze)

# MECHANISM



- Convection Current
- Hot Gauze



Working of Rijke's  
Tube

# CONCLUSION

1. One layered Wire Gauze won't work.
2. Three Layered Wire Gauze is Nesecery.
3. If the Wire Gauze is already burn the phenomenon wont work.

Thanks For your Attention