Potato Rifle

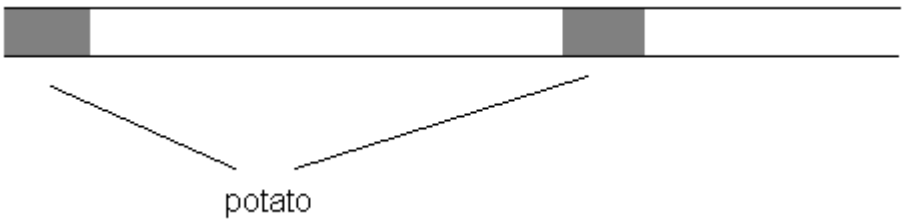
Boyle's Law, now with produce

Chemicals and Equipment Needed

- Labeled pipe – **corner near A**
- Small dowel rod – **corner near A**
  - Fits inside the pipe
- Stopper that fits dowel rod – **U3**
- Potato

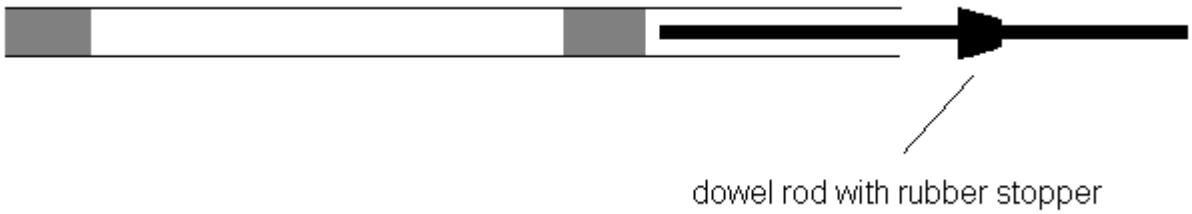
Preparation

- Cut the potato into ¾" slices. Store under water in a beaker until use.
- Ten minutes before class, set the potato slice onto a paper towel and use the pipe to stab the potato. Use the dowel rod to push the potato core ¾ of the way down the pipe. Stab the potato slice again and leave this potato core inside the end of the pipe.
- Adjust the stopper so that the dowel rod will stop about halfway through the pipe.



Presentation

- Lay the pipe on a flat surface with the potato end facing a side wall. Hold the pipe down with one hand.
- Hold the dowel rod behind the stopper and quickly and forcefully ram it down the pipe.



- You will hear a kind of "pop" and the potato core will shoot out the end of the pipe.

Discussion

- Boyle's Law: $PV = k$
- You forcibly decrease the volume of gas between the trapped potato cores. As volume decreases, pressure increases, shooting the potato core across the room.

Clean-Up

- Discard the potato cores. Clean the pipe out with the long bottle brush.