PHY 201/181 Lab Instructor notes
Lab 11: Measuring Absolute Zero
Fall 2001

- An hour before the lab starts, you should turn on the ice-maker in the chemistry lab.
- you will need:
  - manometers are in cabinet 20.
  - stoppers cut for thermometers are above the sink.
  - something to use as "oven mitts" such as a towel.
  - 12 test tube clamps.
  - 6 small clamps to hold the manomters.
  - Weights for each of the rod stands. (because the volume has buoyancy).
- you need from chemistry stockroom:
  - 6 big dewars,
  - 6 thermometers
  - 6 stirring paddles.
  - 2–3 stainless steel buckets for boiling water
  - 2–3 Bunson burners & ring stands
  - 6 lengths of tubing for siphoning the dewars
  - 8 buckets for transferring and collecting water (can also go to janitor's closet)
  - 1 tub for ice.

  Several of these items will also be needed for lab 12.
- At the beginning of lab, start heating water in the stainless-steel buckets using hot plates.
- Demonstrate how to use the siphon to empty the bath.
- Suggest the students might want to make a table to record their results (and do their analysis).
- Record the absolute pressure of the air in the room on the board. Convert, on the board, to something like N/m^2.
- Warn students that reading the pressure and temperature before the system has fully equilibrated produces a large error.

- Suggest that students do their calculations in units of torr. They should look up the discussion of pressure in their textbooks.
- Turn off the ice-maker.

One potential problem with this experiment is leaks in the apparatus. I have not experienced this yet.