In John Valleau's office LM421E, there is a variety of old equipment and instruments, including:

A Moving Boundary Transport Apparatus built by Andy Gordon and Frank Wetmore in the 1930s-1940s?. [Review of methodology McGuiness and Longsworth, Chem Rev., vol11, p171 (1932); AR Gordon, Ann. Rev. Phys. Chem., vol 1, p59-74 (1950)].

this was used to measure directly transport numbers in electrolyte solutions. Using the glass taps at the bottom, one could introduce both the electrolyte of interest and a subsidiary one, to occupy a U-shaped tube (including the narrow tubing with tiny electrode pairs). Providing the subsidiary solution had one ion in common with the test solution, and the remaining ion of the subsidiary was chosen sensibly, passage of a current through the U would force a stable boundary between the two solutions. Furthermore the boundary necessarily moved along the tube at a rate which depended on the proportion of the current carried by the common ion, thus allowing direct measurement of the transport numbers by finding the rate of motion of the boundary. Often the boundary was clear enough to the naked eye to measure its rate very well. In this particular setup the conductivity of the solution between the electrodes at each station along the tube was measured over time. This changed rapidly as the boundary passed through, allowing the boundary's velocity to be measured, and thus the transport numbers.

It is believed that this particular apparatus came from Professor D. J. LeRoy's lab. He had students doing such measurements in the '50s. Professor Valleau's mentor, Frank Wetmore, may very likely also have published such numbers, perhaps done with Dr Axel Lasson.

This was used to measure ion transport numbers and the boundary between the two ion solutions was clearly vis ble and its position could be measured.under different conditions.

A very sensitive galvanometer (black, #733501) with a mirror which allowed enhanced sensitivity, since its deflection is brought about by even a very small current. IMG 2268

An air-driven stirring device IMG 2287

A General Electric galvanometer IMG 2261

A General Radio Decade Resistance Box IMG 2273

A Weston AC DC Voltmeter from 1927 IMG2279

A Honeywell Rubicon instrument of unknown function IMG 2288

A Weston Standard cell IMG 2292

A Hartmann and Braun AG Frankfurt: DC current Ammeter? IMG 2286

A Box of Sartorius weights IMG 2294

Another box of weights in a black box – Permas? from Fisher Scientific IMG 2295

A Mallory Reference Mercury Battery IMG 2297 and 2298

A box of large weights - Ohaus Sto-away, Class-Q-Metric? IMG 2299

Corona Data Systems, Sperry SPX (T3097-02), The first “portable” computer IMG 2302

John Valleau has a brand-new Sartorius analytical balance at home