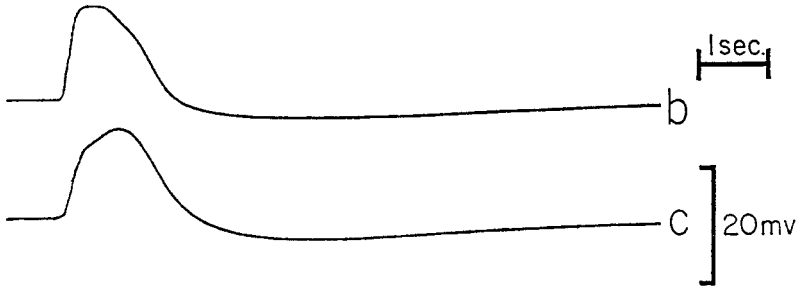
4. (16 pts) I keep a Venus Fly Trap on the kitchen window sill at home to eliminate cluster flies. When a fly bends two or more sensory "hairs" on the inside surface of the trap, or the same hair two or more times in quick succession, the trap closes fairly rapidly and finis to the fly! The inside surface of these traps is moistened with a fluid low in Na^+, K^+ and Cl^-, and the sensory hairs consist of a complex tissue column of cells. Stuart Jaconson (1965) measured the plasma membrane potential of these hair cells and found that when bent they exhibited small, but prolonged, changes in membrane potential, as exhibited below in two representative traces.



A. (10 points) Ignoring the shape variations explain as concretely as you can **how** these changes in membrane potential are *likely* generated.

B (6 pts) It seems obvious the trap is closing in response to the bending of the hair cells and the changes in membrane potential, but how might you prove a causal relationship between these events? Briefly describe an experiment and the expected results.