We examine the flows generated by a fluid jet striking a horizontal impactor. Typically, in this geometry, fluid is expelled radially in a thin sheet until either closing into a bell or breaking into droplets via the Rayleigh-Plateau instability.\textsuperscript{1–3} In our study, glycerol-water solutions with viscosities of 1–60 cS were pumped at flow rates of 10–70 cc/s through nozzles of radius 1–4 mm. The fluid jet struck the center of a circular steel impactor plate with a diameter of 11 mm. An adjustable lip adjoining the plate determined the take-off angle.

In Fig. 1, we see the evolution of a bell formed with a large take-off angle: the bell closes on the jet nozzle before collapsing. In Fig. 2, we see the oscillations of a closed water bell formed with a moderate take-off angle. The time dependence and rupture of such bells have been considered by Clanet.\textsuperscript{4}

As was reported by Hopwood,\textsuperscript{5} a water bell may destabilize following an abrupt decrease in the source flux, and possess a sharp cusp. Figures 3 and 4 indicate the transient behavior brought on by a sudden decrease in flux on a steady water bell. Note the associated cusp structures. After the bell breaks, a smaller one is formed. Quasisteady cusps on conical sheets were generated from steady source conditions over a range of take-off angles (Fig. 5). At low viscosity (1–10 cS), both cusps and capillary waves are present (Fig. 6).