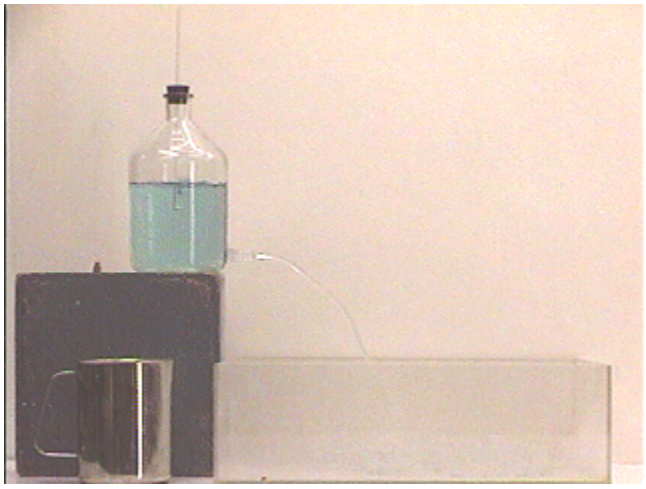
Answer #78

The answer is (c): the range of the water jet remains the same as the water level in the jar becomes lower (*until* the water level in the jar becomes lower than the end of the capillary tube, at which time the range begins to decrease). This can be seen in an mpeg video by clicking your mouse on the photograph below.



This video is a sort of "time lapse" affair; it was made in three segments, with three water levels shown in sequence. You may have to play it twice - once watching the water jet and once watching the water level in the jar; playing the video frame by frame may also help.

Note that the pressure at the bottom of the capillary tube remains at one atmosphere, so as the water level in the jar falls the pressure head pushing the water jet out of the nipple remains equal to the height of the water column between the nipple opening and the bottom of the capillary tube. When the water level becomes lower than the bottom of the capillary tube the range of the water jet becomes smaller with time, as we can more readily see.

This apparatus was invented around the 1920s to provide a source of water with a constant pressure for making measurements of viscosity as well as to perform related experiments.

The next *Question of the Week* also involves this apparatus, but with a different setup.

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Question of the Week

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.