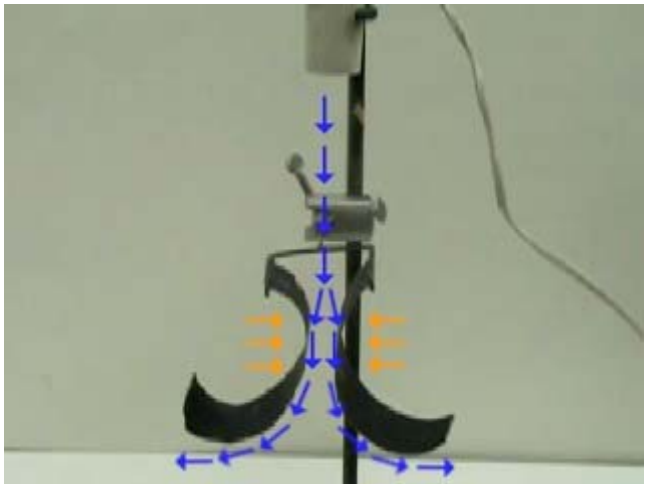
Answer #346

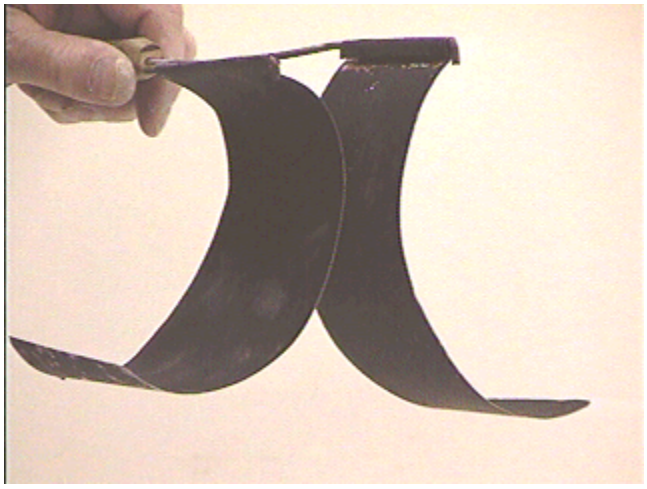
The answer is (a): the sheets will move together, or maybe (d), as seen in an mpeg video by clicking your mouse on the photograph below.



When the airstream begins to move between the plates, it divides up, and part of the stream follows each sheet, leaving the end of the sheet moving tangent to the sheet, according to the Coanda effect. Thus there is a reaction force on each sheet (indicated by the orange arrows) pushing the two sheets together.

However, when they get very close together the air begins to push them apart due to its inertia and the concomitant pressure increase. The plates then oscillate: closer then further apart, as the airstream alternatively pushes them together then pushes them apart; you can hear them hitting in the audio.

Again, as in Question #345, this behavior is in no way related to the Bernoulli effect.



Incidentally, in the actual demonstration as used in classes the two metal sheets are mounted on a handle as seen in the photograph directly above so they can be easily held and easily blown by a mouth. This represents the motion of the vocal folds as air passes through them, creating the source of sound for speech or singing. Lamentably, the Bernoulli effect is often incorrectly used in explaining this phenomenon.

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.