Overcoming Gravity

YOU CAN CHOOSE THE LEVEL OF IRRESPONSIBILITY FOR THIS experiment, depending on your nerve. You can try it over a table or a sink—or over the head of a very courageous volunteer. No matter which approach you use, it’s always fun to see people’s shocked expressions if they’ve never tried this classic experiment demonstrating air pressure.

You Will Need

- DRINKING GLASS
- WATER
- PLAYING CARD OR POSTCARD
- TOWEL OR TUB (IN CASE OF TROUBLE)

METHOD

1. Fill the glass three-quarters full with water.
2. Place the card squarely over the mouth of the glass, making sure that there’s no gap.
3. Pressing the card to the rim, turn the glass over—over your volunteer’s head, if you feel brave!
4. When the glass is upside down, remove your hand from the card.
5. The card should remain attached to the glass and no water should leak out.

The Scientific Excuse

The simple explanation to this experiment is that it all depends on air pressure. The water inside the glass certainly presses down on the card, but what’s surprising is the strength of the air pressure working in the opposite direction—greater than the force of gravity, in this case.

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TAKE CARE! The best objects to cover the rim of the glass are light but firm—so the playing card and postcard are ideal. Anything heavier scores well with firmness but might be a little too heavy for the air pressure to do its trick. Another word of warning to remember: Don’t keep the glass and card overturned for too long. If the card becomes soggy, it deforms. That makes it harder for the air pressure to work, so gravity might suddenly win!