James, David

It's the Extra Added Ingredient

Canadian Makes Water Flow Uphill

Canadian Press

PASADENA, Calif., Dec. 12—A Canadian graduate student at the California Institute of Technology has discovered that ordinary water containing a polymer powder will climb uphill over the edge of its container in a flow that can be stopped by cutting it with scissors.

The gravity-defying properties of "elastic water" were described by David James, 27, a graduate student and teaching assistant in mechanical engineering. He is the son of Mr. and Mrs. Hedley James of Belleville, Ont.

The liquid is more than 90 per cent water. The second ingredient is polyethylene oxide, a powder used in paints, plasters, clothes and women's hair sprays.

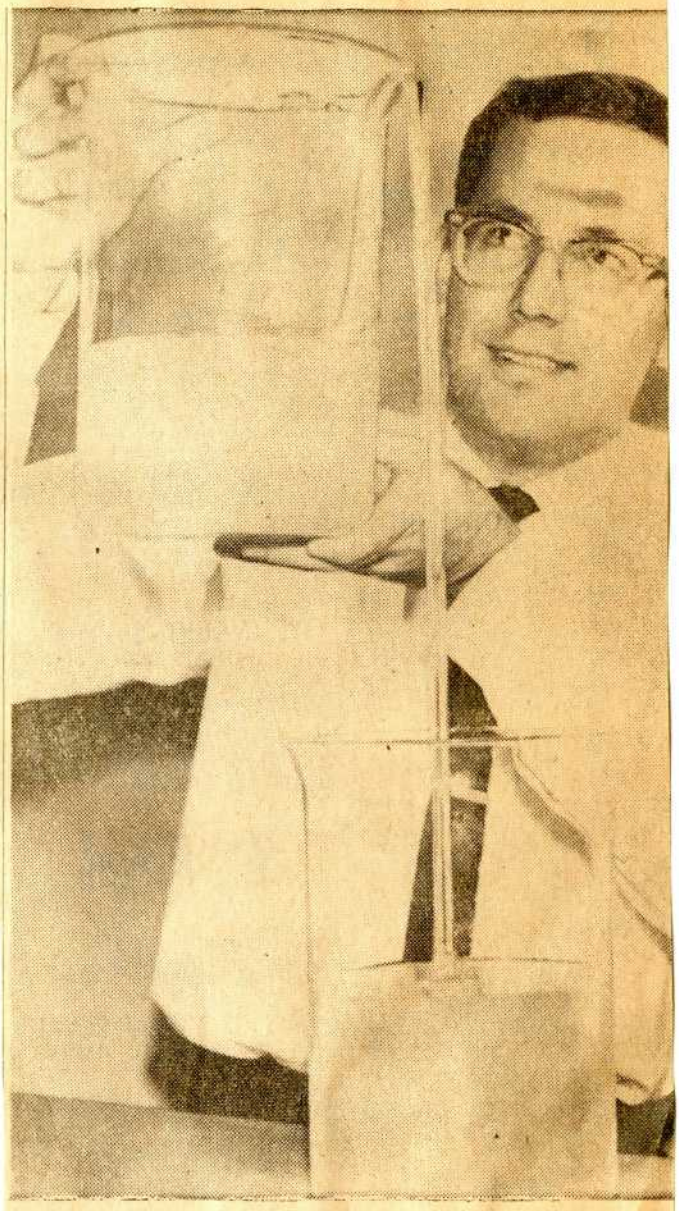
Mr. James said Polymer experts could not recall any other elastic liquid which would continue to flow out of an ordinary container once the flow had been started and the container placed upright.

Mr. James found that if a gallon full of the solution were placed 11 feet or more above an empty beaker, the flow would continue until the first beaker was drained.

"The molecules of the polymer are particularly long and probably intertwined in the solution. As a result, there is an elastic quality that enables the liquid already spilled over the side of a container to pull more of the liquid out. Also, the flow of the liquid acts as its own siphon. It is, in fact, a tubeless siphon."

When the flow is slow enough, a pair of scissors can be used to cut the liquid an inch or two below the container rim. The liquid above the scissors literally "snaps" back into the container and settles there.

Sunlight or long exposure to air causes the polymer to disintegrate and the solution to lose its "climbing" ability.



AP Wirephoto

STUDENT'S DEMONSTRATION: David James, 27-year-old graduate student, shows how the uphill water works.

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