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The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.



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Where There's More

There's always new improbable — it's not what you expect! — stuff on the **Improbable Research blog** at IMPROBABLE.COM



On the Front Cover
A variety of examples of motion.
Dog zooms photo by A.S. Kaswell.

Some Coming Events

(See IMPROBABLE.COM for details of these and other events.)

September 18, 2025
— The 35th First Annual
Ig Nobel Prize Ceremony

September 20, 2025
— Ig Nobel Face-to-Face

October 31, 2025
— Ig Nobel Face-to-Face, London, UK

November 7-9, 2025
— Falling Walls,
Berlin, Germany

November 12, 2025
— Monell Center,
Philadelphia, USA

November TBA, 2025
— Ig Nobel Face-to-Face,
Tokyo, Japan

March/April 2026
— Ig Nobel EuroTour



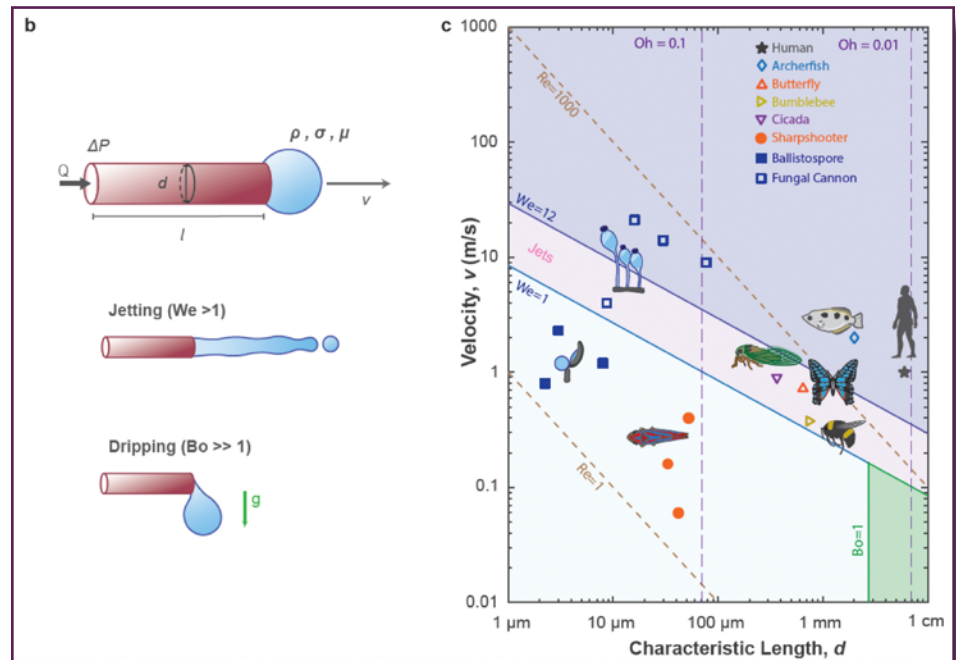
FLUID MOTION: MOTION-SICK DRIVERS, EXCRETED FLUIDS

Examining great subtleties that involve fluid flow
compiled by Lynn-Lin Lin, Improbable Research staff

Fluid Ejections in Nature: From Fungi to Whales

"Fluid Ejections in Nature," Elio J. Challita, Pankaj Rohilla, and M. Saad Bhamla, arXiv:2403.02359, 2014.
(Thanks to Mason Porter for bringing this to our attention.) The authors, at Georgia Institute of Technology, report:

From microscopic fungi to colossal whales, fluidic ejections are a universal and intricate phenomenon in biology, serving vital functions such as animal excretion, venom spraying, prey hunting, spore dispersal, and plant guttation. This review delves into the complex fluid physics of ejections across various scales... We introduce a framework using dimensionless numbers to delineate transitions from dripping to jetting and elucidate the governing forces.



Detail from the study "Fluid Ejections in Nature."

Fluid Ejections in Nature: Cicada Urine Jets (2)

"Unifying Fluidic Excretion Across Life From Cicadas to Elephants," Elio J. Challita and M. Saad Bhamla, *Proceedings of the National Academy of Sciences*, vol. 121, no. 13, 2024, article e2317878121. The authors report:

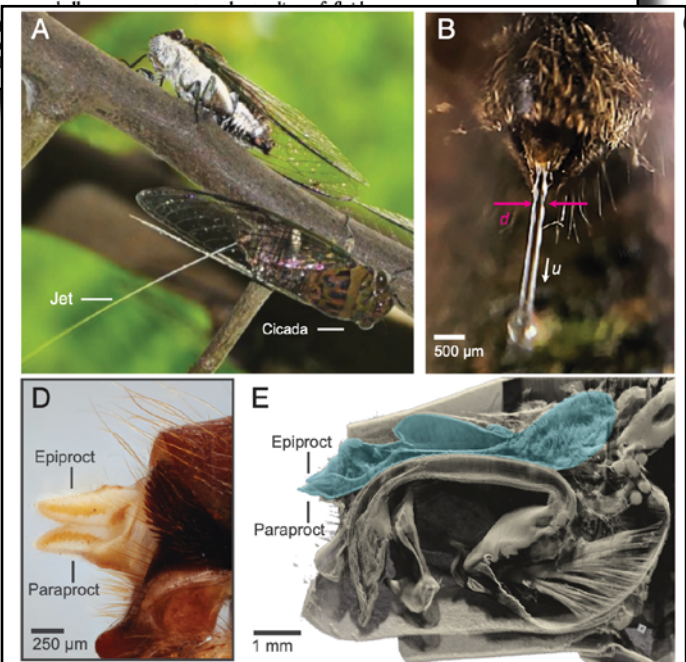
Can insects weighing mere grams challenge our current understanding of fluid dynamics in urination, jetting fluids like their larger mammalian counterparts? Current fluid urination models, predominantly formulated for mammals, suggest that jetting is confined to animals over 3 kg, owing to viscous and surface tension constraints at microscales. Our findings defy this paradigm by demonstrating that cicadas — weighing just 2 g—possess the capability for jetting fluids through remarkably small orifices.

Unifying fluidic excretion across life from cicadas to elephants

Elio J. Challita¹ and M. Saad Bhamla^{1,2}

Edited by David Weitz, Harvard University, Cambridge, MA; received October 22, 2023; accepted January 30, 2024

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Detail from the study "Unifying Fluidic Excretion Across Life From Cicadas to Elephants."

FLUID MOTION: MOTION-SICK DRIVERS, EXCRETED FLUIDS [CONT'D]

Which Yoked Automobile Drivers Become Motion Sick?

"Why Is the Driver Rarely Motion Sick? The Role of Controllability in Motion Sickness," Arnon Rolnick and R.E. Lubow, *Ergonomics*, vol. 34, no. 7, 1991, pp. 867-879. The authors, at Israel Naval Hyperbaric Institute and Tel-Aviv University, report:

Although it is generally agreed that having control over a moving vehicle greatly reduces the likelihood of motion sickness, few studies have addressed this issue directly, and the theoretical explanation for this phenomenon is not completely clear. In the study, we equated groups differing in controllability for bead movement, vision, activity, and predictability, which have often been suggested in the literature as explanations for the driver's immunity to motion sickness. Twenty-two pairs of yoked subjects were exposed to nauseogenic rotation. One subject of each pair had control over the rotation and head movements, while the other was exposed passively to the same motion stimulus. Subjects who had control reported significantly fewer motion sickness symptoms and less of a decrement in their well-being, as compared to the yoked subject without control.

Why is the driver rarely motion sick? The role of controllability in motion sickness

ARNON ROLNICK

Motion Sickness and Human Performance

Department of Psychology,

Keywords: Motion sickness;

The central hypothesis of the work plays an important role in motion sickness, few studies have addressed explanation for this phenomenon is

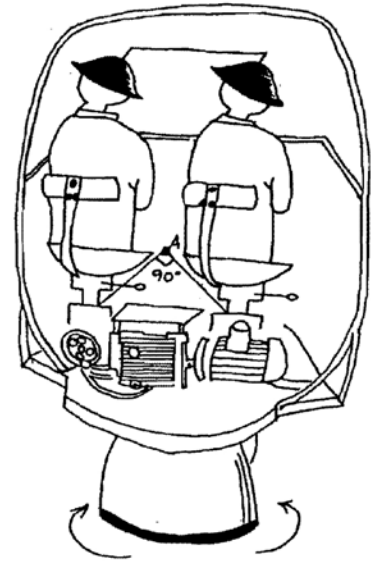


Figure 1. The head-yoking and the two-seat rotating device (A—Centre of rotation).

Detail from the study "Why Is the Driver Rarely Motion Sick? The Role of Controllability in Motion Sickness."

AIR Teachers' Guide

Three out of five teachers agree: curiosity is a dangerous thing, especially in students. If you are one of the other two teachers, AIR and mini-AIR can be powerful tools. Choose your favorite hAIR-raising article and give copies to your students. The approach is simple. The scientist thinks that he (or she, or whatever), of all people, has discovered something about how the universe behaves. So:

- Is this scientist right—and what does "right" mean, anyway?
- Can you think of even one different explanation that works as well or better?
- Did the test really, really, truly, unquestionably, completely test what the author thought he was testing?
- Is the scientist ruthlessly honest with himself about how well his idea explains everything, or could he be suffering from wishful thinking?
- Some people might say this is foolish. Should you take their word for it?
- Other people might say this is absolutely correct and important. Should you take their word for it?

Kids are naturally good scientists. Help them stay that way.