

Pain, Pleasure and What Researchers Might Learn From the Flea Circus

By JAMES GORMAN

I have to admit that the first sentence caught my eye. It's not often that you find a scientific article that begins, "Can relief from pain be a pleasure?"

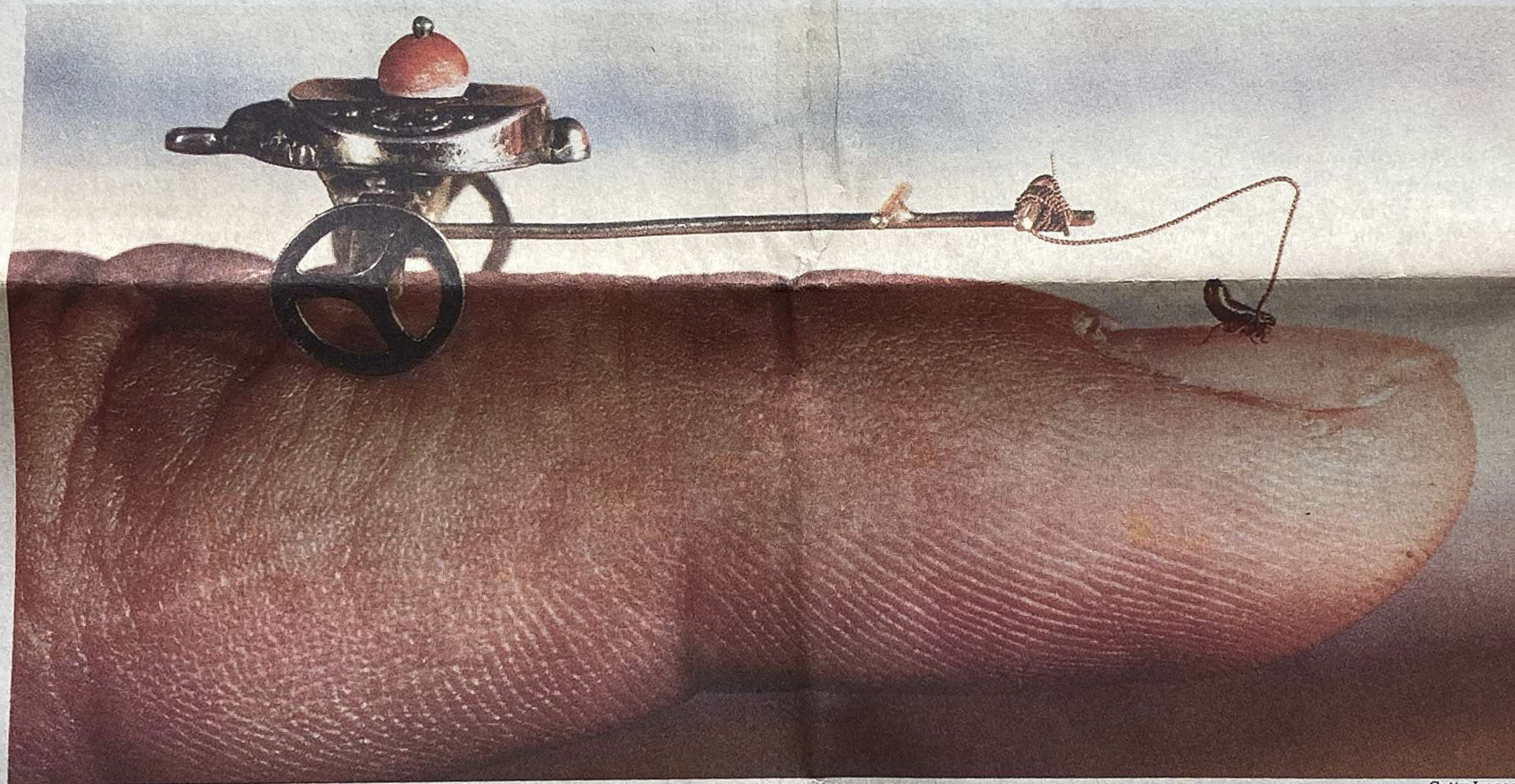
When I started reading, however, I soon discovered that this was not research in the long and honorable tradition of Kinsey. There wasn't a dominatrix to be found. No one dressed in leather. In fact there was no sex at all. You can imagine my relief.

Instead of some lurid tale of domination and submission, the article was all about fruit flies — their pain, their pleasure and what neurological pathways mediate the experience. What the scientists, at the University of Würzburg in Germany, discovered is that it really does feel good when you stop beating your head against the wall.

I mean that figuratively, of course. The researchers didn't really beat the flies' tiny heads against tiny brick walls. That would have been too weird, more appropriate for a flea circus, which seems to be the theatrical parallel to scientific insect training.

The scientists, who published their findings in the current issue of *Nature*, were far more clinical. They used electric shocks and odors to train the flies. The researchers first showed that when the flies were exposed to an odor and then a shock, they connected the smell with the pain and learned to avoid that odor. So far, no surprise.

It was the next step that marked the researchers' entry into the shadowy world where pleasure and pain are entwined. When the odor followed the electric shock after a brief period, instead of preceding it, the flies became attracted to the odor. They associated the smell with the sense of relief



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A flea pulls a tiny cart along an outstretched finger. A result of intensive training? Or a bit of theatrical trickery?

from pain. Since they were only fruit flies, they didn't figure out that you could get the relief only if you had the pain first.

The researchers concluded that the neurological pathways involved in pleasure might also be involved in absence of pain. I concluded that fruit flies were just not that bright. You could read the research as a rec-

ommendation for head banging and stopping. But that would be anthropomorphism.

Fleas, however, are insects. If fruit flies could be trained, I thought, why not fleas? Perhaps the fleas in flea circuses had learned some tricks; perhaps it was not all sleight of flea. I was beginning to think that I had stumbled on one of those mysterious in-

tersections of art and science.

Apparently not. Flea trainers don't publish in peer-reviewed journals, and the era of great flea circus popularity has passed, but it seems pretty clear that flea circuses are theatrical illusions.

Flea trainers use the natural movements and reactions of fleas. They do not have a

troupe of trained fleas, with apprentices in the wings waiting to take over. Sometimes fleas are glued to a harness, for instance. As the flea struggles, it pulls a carriage or a train, as if it were trained to do so. Dead fleas are even easier to "train." You can glue them to any kind of circus apparatus that is moved in some other way.

The flea circus may seem to belong to the past, but actually it has taken the time-honored path from sideshow to art gallery. *Maria Fernanda Cardoso*, an artist, has created an elaborate flea circus that has been presented around the world.

I take some comfort in the idea that although the fleas in circuses are not trained, and often not even alive, science has proved that they could be trained. (I'm sure they are as smart as fruit flies.)

I don't know how happy the flies, or the fleas, are about all of this. Science and art can both be cruel, to different ends. Scientists try to establish what's real and obtain more grant money. Artists like to play with what's real and get more grant money, or sometimes make actual cash sales.

Science is, of course, expected by many to have some practical value, and indeed, by shocking fruit flies we may one day learn why dominatrixes are so popular.

People look to art for insight and inspiration. We hope that it will say something about the human condition. The flea circus may be saying that we are all glued to our seats, or that we could be replaced by dead people.

Or maybe, as usual, Mark Twain was right in the nugget of wisdom and truth he found in the flea circus. He cut straight to the heart of the matter, in a nonpartisan manner, when he wrote, "You can train a flea to do anything a congressman can."