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GIRAFFES DON'T SINK,

and approx. 137 other fantastic insights from science

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'After I had turned the last page of this book,
I realized that our understanding
of the universe had changed forever.'

ALBERT EINSTEIN
The most brilliant scientist in history

(He didn't actually say that, but then again he didn't get the chance to read this book. So yes, it could have been true. I guess we'll never know. On the other hand, now that I come to think of it, I'm quite sure he would never say that.)

Thank you to everyone who is crazy enough
to marvel at this brilliant world

The science of loose screws

What would happen if you pushed a giraffe into a deep swimming pool? Would the long-necked miracle drown, or casually swim a couple of lanes? It seems like an irrelevant question, and it probably is, but it's one that no one can give a conclusive answer to. No one has ever seen a giraffe swimming. And no one has ever dared to push a giraffe into a pool, given the obvious practical and ethical concerns. So we don't know. Biologists can only guess. Most mammals are good swimmers, but you can't just extrapolate that knowledge to giraffes. Because of their unusual body structure – a short body, long legs and a long neck – biologists suspect that giraffes would sink like stones. Because 'suspect' is such a disappointing start to an answer, mathematicians Donald Henderson of the Royal Tyrrell Museum of Paleontology in Canada and Darren Naish of the University of Portsmouth rushed to the biologists' aid. They developed a digital version of a giraffe, and threw it into a similarly digital pool. The masterminds developed their computer model based on the weight, mass, lung capacity and center of gravity of a real giraffe. Their conclusion: there's no reason to believe that giraffes would sink. Even swimming ought to work, although it would look very clumsy. The animals just aren't blessed with particularly buoyant bodies. Their long front legs would pull their whole body down, so a giraffe in a pool

would have to keep its neck horizontal and just below the surface. In order to breathe, the giraffe would then have to raise its head at an uncomfortable angle to keep its nostrils above water. So, giraffes can swim in theory, but in reality, few of them would put on their speedos.

Bam. Another mystery solved. Amazing, isn't it?

We ourselves, the world and the universe are full of such bizarre questions. This book is an ode to scientists who feel the urge to unravel those mysteries, no matter how crazy. Science is much more than a search for answers, it is above all, wanting to, being able to and daring to tackle knotty questions. For that, you need the ability to be amazed, and possess curiosity, creativity, observational talent and sometimes have a screw loose. For the science of loose screws, I have devised an academic domain: fantastic science, the mix of humour and intellect, where researchers devise bizarre experiments and gain insights that first make us laugh, and a little later also make us think. Can animals have an orgasm? Why does your mother call more often when it rains? And why do we find ourselves and others more attractive when we have been drinking? Your desire for answers will be satisfied in this book.

While fantastic science mostly celebrates amazement and gives you endless inspiration for bar stories, it also often yields unexpected insights. British scientists discovered that named dairy cows give more milk than unnamed cows. A fun fact that at the same time underlines the importance of animal welfare. Livestock farmers who name their cows are believed to have a closer relationship with their animals, making them feel better, experience less stress, and yield more milk. And research that quantified how downy ducklings swim effortlessly after their mothers is inspiring engineers to enable ships to use less fuel.

With this book, I want to encourage you to embrace curiosity, approach questions with an open mind and, above all, never be afraid to ask questions. For it is precisely the fantastic ideas that, from time to time, reshape our understanding of the world, the universe, and ourselves.

Kim

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Peaches and Eggplants

THE MALE ORGASM IS PURE MATHEMATICS

There are formulas that make mathematicians orgasm, but mathematicians have also created a formula that describes getting an orgasm. Unfortunately, they do limit themselves to the male orgasm. The female orgasm is still too complex, even for modern mathematics. The model describes the stages leading to an orgasm. In the 1960s and 1970s, sexologists William Masters and Virginia Johnson pioneered this field. They introduced the concept of the sexual response, divided into several phases: first comes arousal, followed by a plateau phase, which then turns into an orgasm. The fourth and final phase is called the resolution phase, the moment when the man sighs as he lowers himself against the back of the bed while lighting a cigarette – that's how they do it in movies anyway. Sexologists have since built on the work of Masters and Johnson, but in doing so remained – according to the mathematicians who designed the formula – too superficial in their description. So Konstantin Blyuss and Yuliya Kyrychko from the University of Sussex demystified the male orgasm using a formula with hard numbers. That proved less straightforward than the immune responses, infections and epidemics that the pair usually pour into formulas. Sexual experience is quite subjective,

and people – men – tend to lie about their sexual experiences. Fortunately, scientists today have access to very precise measurements of arousal, collected from men performing sexual activities in an fMRI scanner, alone or with a partner. Blyuss and Kyrychko were eventually able to rely on data from ten thousand sexual acts and more than three hundred male participants. The first-ever mathematical model of male orgasm includes all the physiological and psychological aspects needed to reach climax. The model not only explains orgasms during sex and masturbation, but can also predict the likelihood of successful ejaculation. A key finding, for example, is that too much arousal early in the process inhibits the chances of reaching climax. In other words, walking around with the proverbial pistol in your pocket for too long is pernicious for the party atmosphere. That just leaves us the female orgasm, which, according to both mathematicians, is a lot more complex both physiologically and mathematically – but they are working on it.

LOVERS OF FAST CARS THINK THEY ARE PACKING A SMALLER TOOL

British psychologists have confirmed what we have long known: men with muscle cars want to compensate for something. The link between the horsepower under the bonnet and the number of inches behind the zip is as old as the muscle car itself, and is the subject of humour and ridicule just about everywhere in the world, as well as scientific research. From an evolutionary point of view, it's logical enough. An expensive sports car plays the same role as a peacock's tail. A more than 100-year-old theory calls it 'conspicuous consumption', or 'an expensive display of seemingly wasted resources designed solely to attract mates'. And it is said to be successful. A US study from 2011, for example, showed that women find the same man more attractive when he's standing next to a sports car. Another possible explanation is that men want to boost not their limited penis length, but their low self-esteem. Several studies show that luxury goods, such as sports cars, have that magical power. The researchers from University College London tried to demonstrate that. They presented two hundred men with a series of factoids, while gauging their interest in sports cars and other luxury goods. The researchers made the participants believe they had a relatively small or large penis by giving them incorrect information about the average penis length. Men who thought their penis was shorter than average craved an expensive sports car more than men who discovered they were among the more well-endowed guys in the class. The link became stronger once men passed the age of twenty-nine. The researchers manipulated self-es-

teem in other ways, but that had no impact on desire for sports cars or other luxury items. Now that science has confirmed it, everyone will soon know that men with muscle cars hide little muscle power behind their zip. Perhaps better to buy a Mini, then?

MEN CAN'T BE 'JUST FRIENDS'

Heterosexual men and women can't be 'just friends'. Men in particular often crave more. US researchers asked 176 men and women from 88 pairs of friends how they perceived their friendship. Men often rate mutual sexual attraction much more positively than women. They also have far fewer problems with some occasional flirtation, even if their friend has a partner. An attractive woman apparently remains an attractive woman, with or without a boyfriend. Unfortunately for men, their female friends do not think like them. Women do see their male friends as 'just friends', and are also blind to the sexual signals their supposedly platonic friend thinks he's sending out. Let's just stay friends?

EXCITEMENT MAKES SEX LESS DIRTY

Women who are sexually aroused find 'dirty' tasks a lot less dirty.

Psychologist Charmaine Borg from the University of Groningen had women spend half an hour watching either a female-friendly porn film, a film about extreme sports, or boring images of all kinds of landscapes seen from a moving train. Afterwards, the women had to perform a number of gross tasks, such as sliding their hand into a bowl of 'used' condoms. The condoms were obviously not really used, but the subjects didn't know that. Women who were sexually aroused had less trouble with the gross tasks than the other two groups.

MAN IS MORE THAN JUST PENIS

According to the irritating spam in your inbox, bigger is indeed better, but scientists are now coming up with a more nuanced story about the length of the male sex organ. Women, when judging sexual attractiveness, not only look at what's hanging between the legs, but also at the combination of body height, body shape and penis length. For an athletic hunk of 1.85 meters, a penis of seven centimetres (when flaccid) is sufficient. To be found equally attractive, the love muscle of a 1.70-metre long man must be 11 centimetres long. The researchers came to this conclusion by bestowing Italian men with a series of different penises using a photo editing program. 105 women were then asked to rate the 343 different combinations for attractiveness.