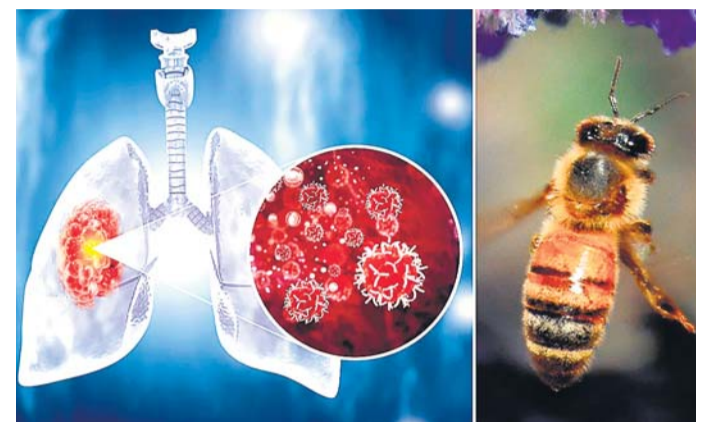


Since films from India entered onto the scene, the entertainment industry has never been the same. The popularity of Bollywood has grown significantly over the past few years and has created an entire subculture that has taken the world by storm. When the Indian film industry began in the early 1900s, it started out in the same way as Hollywood, with silent films. But when talking films began in the form of Bombay Talkies, the industry began to grow in the 1930s. It was very different than films from the West.

#RESEARCH

Honey Bees Can Sniff Out Lung Cancer

Insects have an amazing sense of smell, the same way dogs do.



Honey bees can detect biomarkers or chemical concentrations associated with lung cancer in human breath, according to a new study. The findings also show that honey bees can distinguish between different lung cancer cell types using only the 'smell' of the cell cultures. These findings could be used as a model for developing new tests to diagnose lung cancer early.

"Insects have an amazing sense of smell, the same way dogs do," says Debajit Saha, an assistant professor in the Michigan State University College of Engineering and the Institute for Quantitative Health Science and Engineering.

Saha and his team wanted to see if honey bees could distinguish between the chemicals in human breath from someone who was healthy compared to someone with lung cancer.

Elyssa Cox, Saha's former lab manager, and Michael Parnas, a doctoral candidate working in Saha's lab, developed a 'recipe' for a synthetic breath mixture using different levels of six compounds such as trichloroethylene and 2-methylheptane to create the chemical makeup of the breath of someone with lung cancer and a synthetic healthy breath mixture.

"It took a steady hand to create the recipe," says Cox. "We tested the synthetic lung cancer versus healthy human breath mixtures on approximately 20 bees."

Cox helped design a custom 3D-printed harness to hold a live honey bee while she attached a tiny electrode to its brain to measure any changes in the bee's brain signals. "We pass those odors on to the antenna of the honey bees and recorded the neural signals from their brain," says Saha. "We see a change

in the honey bee's neural firing response."

The researchers also wanted to measure how much of the cancer-inducing compounds needed to be present in someone's breath for the honey bee to detect cancer. "The honey bees detected very small concentrations. It was a very strong result," says Saha. "Bees can differentiate between minute changes in the chemical concentrations of the breath mixture which is in the parts per 1 billion range." Parnas analyzed the neural data and saw the spikes in the bees' brain signals. "We can see differences in how the honey bees are smelling," says Parnas. "We detected several different neurons firing in the honey bees' brains that clearly differentiated between the synthetic lung cancer breath and healthy breath."

Another graduate student from Saha's team, Autumn McLane-Svoboda and an undergrad, Summer McLane-Svoboda jointly led the human lung cancer cell culture experiments with the help of Christopher Contag, director of Michigan State University's Institute for Quantitative Health Science and Engineering, and his lab.

"What's amazing is the honey bees' ability to not only detect cancer cells, but also distinguish between cell lines of various types of lung cancer," says Autumn McLane-Svoboda. "The future implications for this are huge as our sensor could allow for patients to receive specific cancer diagnosis quickly, which is imperative for correct treatment routes." In the future, Saha's team plans to develop a non-invasive test which only requires patients to breathe into a device and the sensor inside, and based on honey bee brains would analyze the breath and wirelessly report back in real time, if cancer chemicals are present.

Another book which has detailed description of explaining the reasons for an animal becoming a man-eater is the classic book, *Leopard of Rudraprayag* by Jim Corbett. Corbett's notes revealed that this leopard, a large elderly male, was in fine condition except for a few healed injuries sustained from hunters after it had become a man-eater. The leopard had started hunting people eight years earlier, when it was still young. Therefore, it was not old age or injury that caused it to turn to hunting people. Corbett wrote that, in his opinion, human bodies left unburied during disease epidemics were the main reason for the Rudraprayag and Panar leopards to become man-eaters.

Man-Eaters- Lions, Tigers, Wolves

#WILD AND DANGEROUS



Dr. Goutam Sen
Cardiothoracic &
Vascular Surgeon

Human beings and carnivores have a tenuous relationship. Both are the hunters and the hunted. Ever since there has been 'civilisation,' this relationship has existed. Both have hunted for the same lot of animals, primarily for food. Their paths have crossed, if at all, by chance, and basically, they have avoided each other. The humans, having gained superior equipment and weapons, have ventured to capture and kill carnivores for pure pleasure, trophy collection. A display of ego, which is limited to humans alone! It should be noted that humans do not eat the meat of any of the carnivores they kill. In some ethnic groups, however, the meat, fat and bones have been used for medicinal purposes. The *Chinese Tiger Balm* is famous.

On the other hand, most carnivores avoid human beings and hunt for food. They rarely kill for any other reason and never kill in wanton excess. This trait too is limited to 'civilised' humans. The Trophy Board at Keoladeo Bird Sanctuary at Bharatpur is an example of wanton killing. That is why nature lovers call most carnivores as noble animals.

Incidentally, it is interesting to note that carnivores are limited to regions north of the Wallace line, a line that is drawn along the Malacca strait. Geologically, Asia and Australia were never fused together. There are no carnivores in Australia and New Zealand and the Pacific region. The same is true for Marsupials who are limited to the Australian continent. Only birds and bats can cross the line.



The Indian subcontinent has the largest number of carnivores and humans. Therefore, it is not surprising that conflict will take place between the two. Yet, historically, the incidence of man-eating animals has been hard to trace. To a layman like me, I find references to incidences of man-eating animals limited to the last two centuries.

There have been few books on man-eating animals in English literature. One such complete documentation has been in a book by Kenneth Anderson in the early years of the 20th Century, *Nine Man-eaters and One Rogue*. It details the experience of this hunter. His hunts were in a wide area and mostly for trophy hunting. He was asked to help in killing these Man-eaters by the local people and the government of the time. The book makes interesting reading.

In his introduction, he writes, "Man-eaters of both varieties have generally been created by the interference of the human race. A tiger or panther is sometimes so incapacitated by rifle or gunshot wound as to be rendered incapable, thereafter, of stalking and killing the wild animals of the forest, or even cattle, that are its usual prey. By force of circumstance, therefore, it descends to the weakest and puniest of creatures, quite incapable of defending himself when unarmed."

He goes on to relate that, on occasions, the man-eater may have been caught in a trap or have festered wounds of the paw due to porcupine quills. The taste of human flesh has been known to have been acquired by the animal devouring corpses thrown into the forest during an epidemic. Rarely, such habits can be transferred by the female to her cubs also.

Once the habit of easy prey is acquired, the carnivores rarely revert to their natural diet. Anderson goes on to add that these animals develop special skills to hunt humans. They appear so mysteriously, and pick up their human quarry so silently that they are often referred to as *phantom animals (Shaitan)*. During his hunt of these animals, Anderson goes on to tell that man-eaters are known to become very cunning and quite often avoid the hunter. Each of his stories details how much hard work it was to finally kill the animal. The cunning man-eating Lions of Tsavo in Africa would hunt in pairs and one would act as decoy by showing itself to the hunter while the other would attack from the rear.

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sic book, *Leopard of Rudraprayag* by Jim Corbett. Corbett's notes revealed that this leopard, a large elderly male, was in fine condition except for a few healed injuries, sustained from hunters after it had become a man-eater. The leopard had started hunting people eight years earlier, when it was still young. Therefore, it was not old age or injury that caused it to turn to hunting people. Corbett wrote that, in his opinion, human bodies left unburied during disease epidemics were the main reason for the Rudraprayag and Panar leopards to become man-eaters.

A leopard, in an area in which his natural food is scarce, finding these bodies very soon acquires a taste for human flesh, and when the disease dies down and normal conditions are established, he very naturally, on finding his food supply cut off, takes to killing human beings. Of the two man-eating leopards of Kumaon, which between them killed over five hundred and twenty five human beings, one followed on the heels of a very severe outbreak of cholera, while the other followed the mysterious disease which ease which s w e p t t h r o u g h I n d i a i n 1 9 1 8 (t h e i n f a m o u s S p a n i s h F l u 1 9 1 8). Besides tigers, panthers and leopards, wolves have been found to become man-eaters. Here, there is a common refrain about man-eaters. Let us hope and pray that our sanctuaries create enough natural spaces for the carnivores so that they do not have to seek their food amongst men!

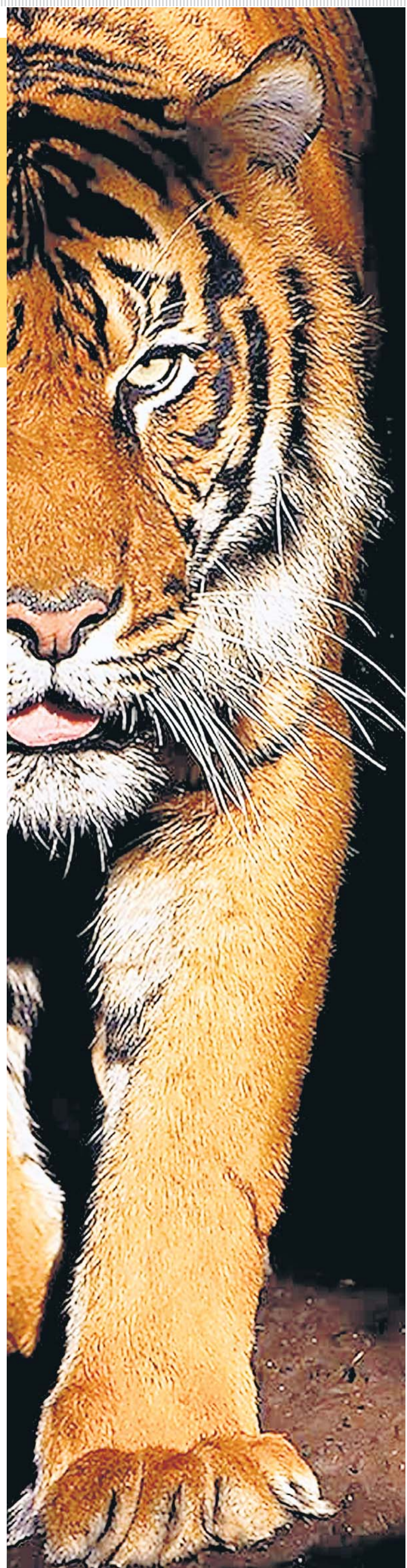
The recent attacks by wolves in Bahraich is a matter of concern. Although an all-out attack has been made, the killing and trapping has been difficult. Records of wolf attacks in India began to be kept during the British colonial administration in the 19th Century. In 1875, more people were killed by wolves than tigers, with the worst affected areas being the Northwest Provinces and Bihar. In the former area, 721 people were killed by wolves in 1876, while in Bihar, the majority of 185 recorded deaths at the time occurred mostly in the Patna and Bhagalpur Divisions. In the United Provinces, 624 people were killed by wolves in 1878, with 14 being killed during the same period in Bengal. In Hazaribagh, Bihar, 115 children were killed between 1910 and 1915, with 122 killed and 100 injured in the same area between 1980 and 1986.

All such depredations of animal attacks have to be eliminated. Human life and safety are primary in the present era, sanctuary in enclosed areas has been proposed. This is not always possible. The final solution is to hunt each and every such animal and destroying them. Evidently, in the case of wolves, this is not an easy task. Despite a large group of hunters and use of drone technology, the wolves of Bahraich are still eluding the hunters! The fact is that there are no hunters of repute available any more. The wild life are 'shot' by cameras only!

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#PARENTING

Deep Breathing to Calm a Child

Taking a few slow, deep breaths significantly reduces children's physiological arousal in everyday settings, research shows.

It's one of the first things parents and teachers tell a child who gets upset, "Take a deep breath." But research into the effect of deep breathing on the body's stress response has overwhelmingly ignored young children, and studies done with adults typically take place in a university lab, making them even less applicable to children's actual lives. By measuring the effects in naturalistic settings such as day camps and playgrounds, the study more closely reflects a child's experience than a study in a lab would. "This study is the first to show that taking a few slow, deep breaths in an everyday setting can have a significant effect on a child's stress physiology," says the study's lead author, Jelena Obradovic, an associate professor at Stanford University Graduate School of Education (GSE) and director of the Stanford Project on Adaptation and Resilience in Kids (SPARK Lab).



A Visual Guide to Deep Breathing

Mindfulness practices that incorporate deep breathing, such as yoga and meditation, have found their way into the classroom at many schools. But prior to this study, research had not clearly shown whether slow-paced breathing itself could significantly alter a young child's physiological stress response, as the researchers say. They set out to isolate the activity of breathing and investigate its impact-taking practical considerations into account, including the likelihood that young children might not have the capacity for even a couple of minutes of deep breathing, and that they would need help learning how to do it. "When you ask young children to take a deep breath,

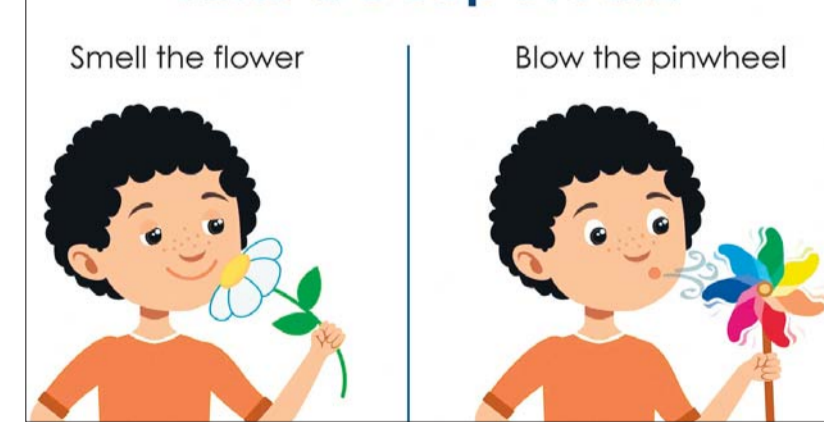
many don't really know how to slowly pace their inhale and exhale, if they haven't had any training," Obradovic says. "It's not intuitive for young kids. They are more successful in taking several deep breaths if they have a visual guide." To help elementary schoolers learn the technique, the researchers worked with a team of artists, based in Berkeley, California, to produce a one-minute video. The animated video shows young children how to slowly inhale by pretending to smell a flower and to exhale by pretending to blow out a candle. "From a pragmatic point of view," Obradovic says, "we thought a very short sequence, four breaths, seemed doable for this age group."

Real Kids out in the world

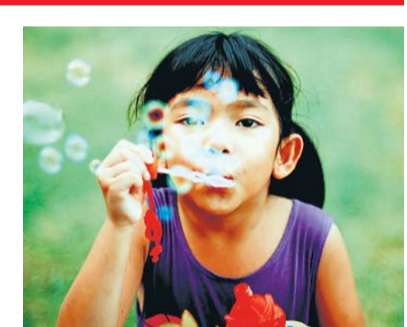
For their randomized field experiment, the researchers recruited 342 young children, 7 years old, on average, with their parents' permission, at a children's museum, a public playground, and three full-day summer camps in the San Francisco Bay Area. Roughly half of the children were assigned to a group to watch the animated video with the deep breathing guidance. The rest watched an informational video that featured similar animated images but did not involve the breathing exercise. All of the children were shown their assigned video in small groups, at tables set up adjacent to

the site from where they were recruited, to maintain a natural setting for the study. Also, in keeping with the real-life approach to the study design, the researchers did not monitor children or provide extra encouragement to implement the deep breathing instruction. "This 'intention-to-treat' approach, analyzing all subjects, whether or not they engaged with the intervention, is widely considered to provide more insight into the potential effectiveness of the intervention, once it is applied in everyday group settings, like classrooms, where not everyone is likely to take part," Obradovic says.

Take a Deep Breath

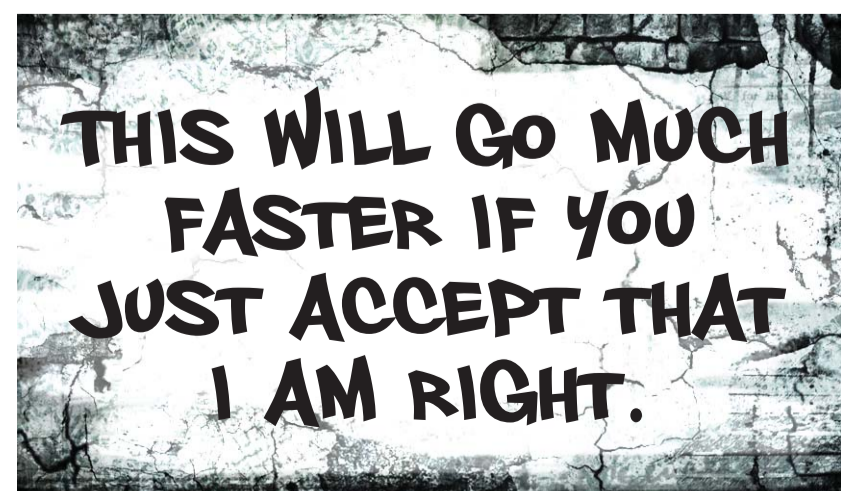


Kids calm down



Researchers measured two biomarkers in all of their recruits, heart rate and respiratory sinus arrhythmia (RSA), which refers to the changing pace of the heartbeat when a person inhales and exhales. "RSA plays an important role in influencing heart rate," Obradovic says, and it has been linked to children's ability to regulate their emotions, focus their attention, and engage in tasks. "When it comes to measuring the effects of deep breathing on stress physiology, RSA seems to be the most appropriate biomarker," says Obradovic. "RSA is the only pure measure of the activity of the parasympathetic nervous system, the system we've evolved to help us deal with everyday challenges, the kinds of challenges that don't require a flight-or-flight response." The change in the measures was profound. RSA increased and heart rate decreased only in response to the deep breathing video, and the effects were greater during the second half of the video, which included most of the deep breathing practice. The children in the control group showed no change in either measure. "Our findings showed that guiding a group of children through one minute of a slow-paced breathing exercise in an everyday setting can, in the moment, significantly lower the average level of physiological arousal," Obradovic says. "Further research should examine the effect of deep breathing in this age group after a stressful or challenging experience," she says. But the fact that children of this age can downregulate their stress physiology, even when they're relatively calm, offers promise that the technique will be even more effective when they're frustrated or upset.

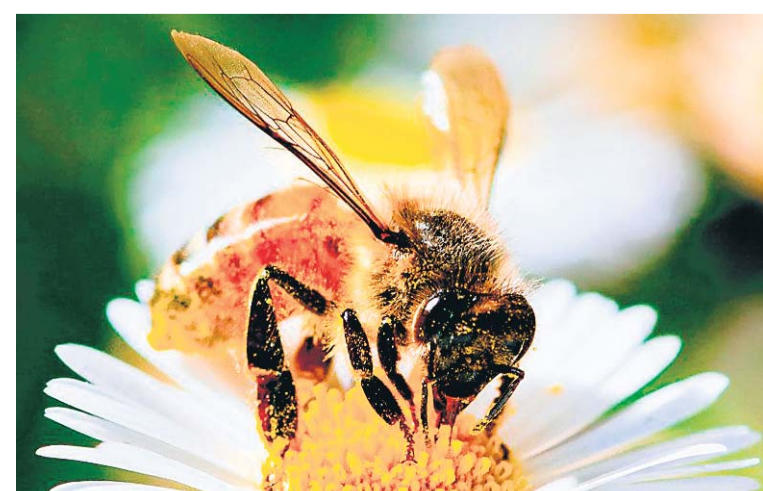
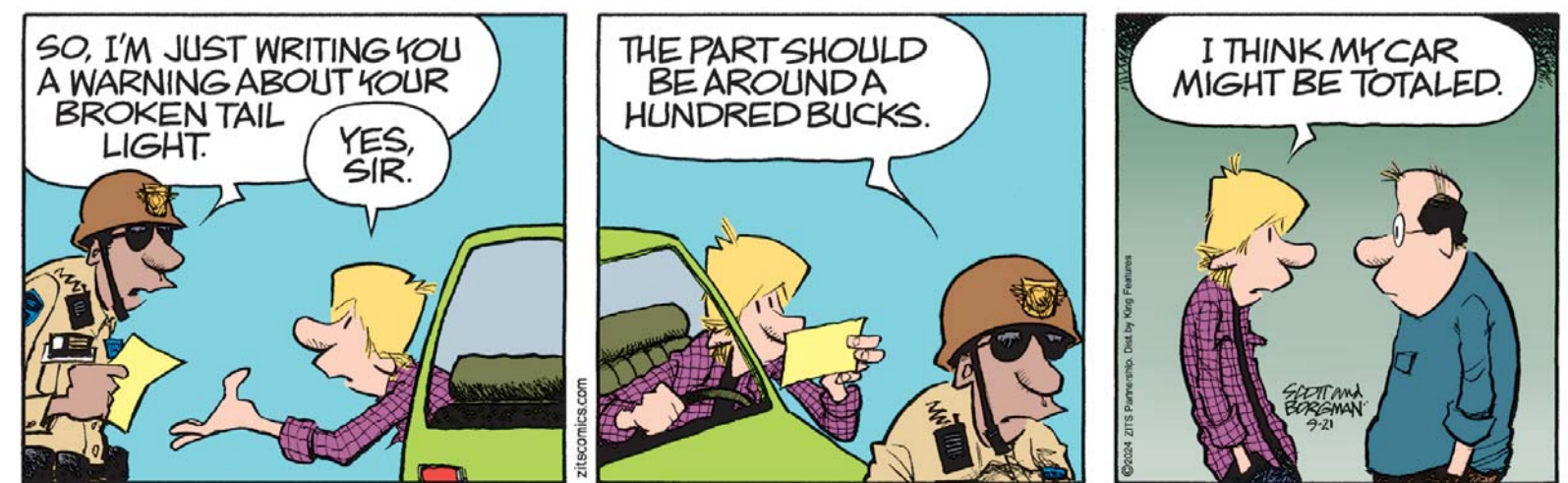
THE WALL



BABY BLUES



ZITS



By Rick Kirkman & Jerry Scott

By Jerry Scott & Jim Borgman