May 27, 2013

Change of pace day. No Washington horrors.

Current Cicada concepts from **Scientific American**
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That's as much of the story as we knew until seventeen years ago, when John Cooley and David Marshall discovered that in fact these remarkable insects have a three-part complex mating ritual, where the males begin with the distinctive "phaaaaarooooah" sound, but don't stop there. They are only encouraged to move on when the females make a tiny flick of their wings, which leads them on to a second sound, "phaaaroah phaaaroah phaaaroah" and then after a second wing flick, the males move on to a third sound, "te te te te te te te te te" and only after all three sounds does he climb aboard and mating begins.

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Free Republic tells us the story of one of China's environmental disasters.
Back in the 1950s, China was going through its Great Leap Forward, an effort to transform China from a largely agrarian nation to a thriving industrial Marxist powerhouse. These sweeping (and often brutal) reforms, touched virtually every facet of Chinese life — and as one particular episode in China's history points out, the animal kingdom was also far from immune. In 1958, China ordered the extermination of several pests, including sparrows — an ill-fated campaign that eventually led to catastrophe.

The Four Pests campaign

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Moreover, the idea fit in quite well with Mao's hard-line totalitarian Communist ideology. Marx himself was far from an environmentalist, proclaiming that nature should be fully exploited by

humans for production purposes (a legacy which may explain China's poor environmental track record to this very day).

Now, while the Chinese citizens were called upon to wage war against all four of these pests, the government was particularly annoyed by the sparrow, or more specifically, the Eurasian Tree Sparrow. The Chinese were having a rough go of it as it was, adapting to collectivization and the re-invention of farming, so they felt particularly victimized by this bird which had a particular fondness for eating grain seeds. Chinese scientists had calculated that each sparrow consumed 4.5kg of grain each year — and that for every million sparrows killed, there would be food for 60,000 people. Armed with this information, Mao launched the Great Sparrow Campaign to address the problem. ...

What-If posts on human being's unique throwing abilities. The sport of baseball uses skills we needed so we could live and prosper as a species.
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Next time you think you need a healthy snack, go to the freezer and get some ice cream. Seriously! Dig this from **Nature Magazine**.
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The report, a meta-analysis of 97 studies including 2.88 million people, had been released on 2 January in the Journal of the American Medical Association (JAMA)[1]. A team led by Katherine Flegal, an epidemiologist at the National Center for Health Statistics in Hyattsville, Maryland, reported that people deemed 'overweight' by international standards were 6% less likely to die than were those of 'normal' weight over the same time period.

The result seemed to counter decades of advice to avoid even modest weight gain, provoking coverage in most major news outlets — and a hostile backlash from some public-health experts. "This study is really a pile of rubbish, and no one should waste their time reading it," said Walter Willett, a leading nutrition and epidemiology researcher at the Harvard school, in a radio interview. Willett later organized the Harvard symposium — where speakers lined up to critique Flegal's study — to counteract that coverage and highlight what he and his colleagues saw as problems with the paper. "The Flegal paper was so flawed, so misleading and so confusing to so many people, we thought it really would be important to dig down more deeply," Willett says.

But many researchers accept Flegal's results and see them as just the latest report illustrating what is known as the obesity paradox. Being overweight increases a person's risk of diabetes, heart disease, cancer and many other chronic illnesses. But these studies suggest that for some people — particularly those who are middle-aged or older, or already sick — a bit of extra weight is not particularly harmful, and may even be helpful. (Being so overweight as to be classed obese, however, is almost always associated with poor health outcomes.) ...

And we have some beautiful pictures from **Earth Science Picture of the Day**.

Scientific American

Discover the Secret of the 17-Year Cicada, But It Won't Get You Tenure

by David Rothenberg

All the hoopla over the 17-year cicadas, set to emerge any day now in the Northeast, has so far missed one of the greatest facts about them. Sure, it's no surprise for grand gatherings of male

animals to get together and sing their hearts out. Frogs do it, crickets do it, and we all know that humans do it. In animals it's called a lek, in humans it's called a rock band, and these words basically mean the same thing.

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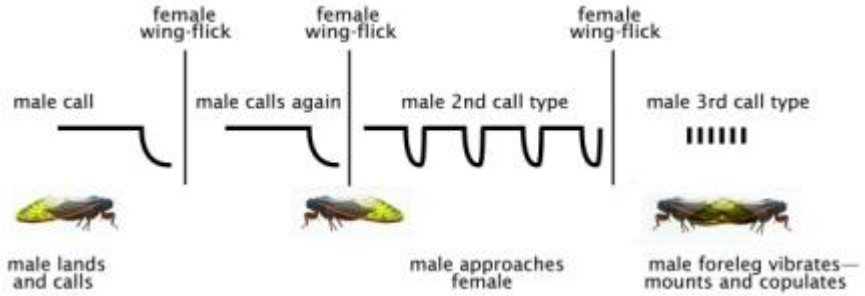

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Author, in a David Attenborough moment...

Two hundred years studying periodical cicadas and no one had ever noticed this until these two young scientists figured it out seventeen years ago and wrote their dissertations revealing a mating ritual far more complicated than that engaged in by any other insect. A truly amazing discovery that happened only because of careful observation and detailed analysis. They each wrote their dissertations about this, and since then have been traveling all over the country

studying every periodical cicada brood, wherever they emerge. Their activities are detailed on the website www.magicicada.org.

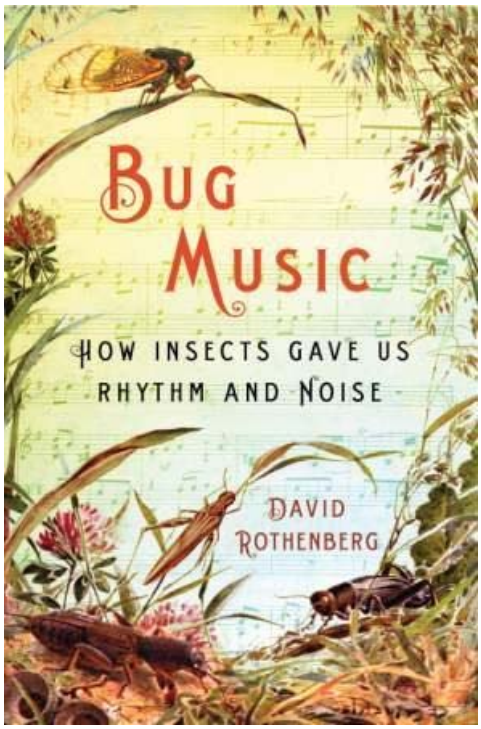
Perhaps even more remarkable is that even after making such a momentous discovery, seventeen years later neither Cooley or Marshall has landed a tenure track job at any university. Both of them labor as adjuncts and pick-up researchers at the University of Connecticut in Storrs, but they can't pay the bills. It is shocking that even after publishing numerous papers on this unique aspect of animal behavior, there is no permanent place in academy for either of them. This is what Cooley has to say about the situation:

"I've just about had it," shrugs Cooley. "I'm going to have to leave academia. I have a family to support, I've started business school."

I don't believe it.

"Frankly I'm shocked that you guys don't both have prestigious positions, for the remarkable cicada discoveries you've made."

"Well thank you, but the academic system is really broken today, especially in the sciences. It should be encouraging people in their own way to go out on a limb and test hypotheses and take risks. But the way it works now, you apply to NSF for funding, and you better have the project figured out before you submit the grant. If I apply for a research job and say, 'I am going to do something really risky and I don't know whether it is going to work, but it is going to be innovative and interesting,' then you can just kiss the job goodbye. It is a sad fact. It is a problem I have with academia and maybe that is why I don't have a job, because I sit here and call it like it is."



Cooley knows that exceptions in nature, like the strange life cycle of the 17-year cicada, often teach us the most important things in evolution. "Nobody in their right mind would try to develop

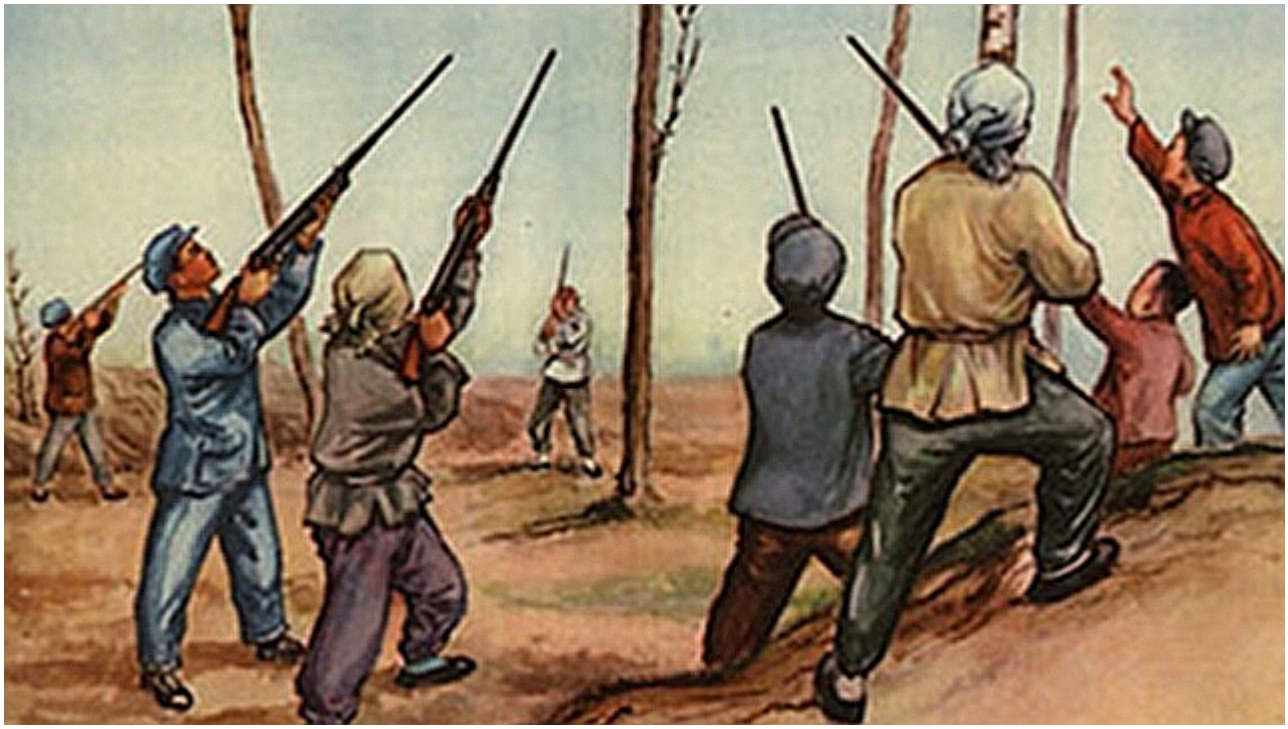
something like a periodical cicada as a model organism. You want to use something safe like a fruit fly, because you can get funding. The fundamental drawback with this kind of cicada work is that it is cheap. It does not cost millions of dollars, and generate millions of dollars in overhead for universities. It doesn't generate that kind of excitement or buzz."

Universities might not encourage it, but it is clear that the public loves the story of the 17-year cicada. From Mother Jones to Stephen Colbert, the cicadas are everywhere in the news this season, and this is before many have even come up. It's a shame that science education doesn't reward two of its greatest pioneers. Any colleges out there looking for innovative biologists doing research that students can easily help out with? Please, do what you can to keep Cooley from disappearing into the mire of the MBA.

Free Republic

China's Worst Self-Inflicted Environmental Disaster: The Campaign to Wipe Out the Common Sparrow

by George Dvorsky



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"Total war"

To accomplish this task, Chinese citizens were mobilized in massive numbers to eradicate the birds by forcing them to fly until they fell from exhaustion. The Chinese people took to the streets clanging their pots and pans or beating drums to terrorize the birds and prevent them from landing. Nests were torn down, eggs were broken, chicks killed, and sparrows shot down from the sky. Experts estimate that hundreds of millions of sparrows were killed as part of the campaign.

An account from the Shanghai newspaper captures the excitement:

On the early morning of December 13, the citywide battle to destroy the sparrows began. In large and small streets, red flags were waving. On the buildings and in the courtyards, open spaces, roads and rural farm fields, there were numerous scarecrows, sentries, elementary and middle school students, government office employees, factory workers, farmers and People's Liberation Army shouting their war cries. In the Xincheng district, they produced more than 80,000 scarecrows and more than 100,000 colorful flags overnight. The residents of Xietu road, Xuhui distrct and Yangpu road Yulin district also produced a large number of motion scarecrows. In the city and the outskirts, almost half of the labor force was mobilized into the anti-sparrow army. Usually, the young people were responsible for trapping, poisoning and attacking the sparrows while the old people and the children kept sentry watch. The factories in

the city committed themselves into the war effort even as they guaranteed that they would maintain production levels. In the parks, cemeteries and hot houses where there are fewer people around, 150 free-fire zones were set up for shooting the sparrows. The Nanyang Girls Middle School rifle team received training in the techniques for shooting birds. Thus the citizens fought a total war against the sparrows. By 8pm tonight, it is estimated that a total of 194,432 sparrows have been killed.

As a result of these efforts, the sparrow became nearly extinct in China.

And that's when the problems started.

Famine

By April of 1960, it started to become painfully obvious to the Chinese leaders that the sparrows, in addition to eating grains, ate insects.

Lots of insects.

And without the sparrows to curb the insect population, the crops were getting decimated in a way far worse than if birds had been allowed to hang around. Consequently, agricultural yields that year were disastrously low. Rice production in particular was hit the hardest. On the advice of the Chinese Academy of Sciences, Mao declared full-stop to the Great Sparrow Campaign, replacing the birds with bed bugs on the Four Pests naughty list.

But the damage was done — and the situation got progressively worse. Locust populations swarmed the countryside with no sparrows in sight. Things got so bad that the Chinese government started importing sparrows from the Soviet Union. The overflow of insects, plus the added effects of widespread deforestation and misuse of poisons and pesticides, were a significant contributor to the Great Chinese Famine (1958-1961) in which an estimated 30 million people died of starvation.

The episode serves as a stark lesson for what can happen when sweeping changes are made to an ecosystem. Yet, in a startlingly similar campaign initiated back in 2004, China culled 10,000 civet cats in an effort to eradicate SARS. And according to Tim Luard of the BBC, they have also launched a "patriotic extermination campaign" that targets badgers, raccoon dogs, rats, and cockroaches. The over-arching lesson, it would seem, may not have be learned.

What-If

How high can a human throw something?

by Irish Dave

Humans are good at throwing things. In fact, we’re great at it; no other animal can throw stuff like we can.

It's true that chimpanzees hurl feces (and, on rare occasions, stones), but they’re not nearly as accurate or precise as humans.[1][2] Antlions throw sand, but they don’t aim it. Archerfish hunt insects by throwing water droplets, but they use specialized mouths instead of arms. Horned

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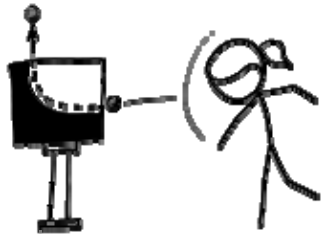
So while there are other animals that use projectiles, we're just about the only animal that can grab a random object and reliably nail a target. In fact, we're so good at it that some researchers have suggested rock-throwing played a central role in the evolution of the modern human brain.[3][4]

Throwing is hard. In order to deliver a baseball to a batter, a pitcher has to release the ball at exactly the right point in the throw. A timing error of half a millisecond in either direction is enough to cause the ball to miss the strike zone.[5]

To put that in perspective, it takes about *five* milliseconds for the fastest nerve impulse to travel the length of the arm.[6] That means that when your arm is still rotating toward the correct position, the signal to release the ball is already at your wrist. In terms of timing, this is like a drummer dropping a drumstick from the 10th story and hitting a drum on the ground *on the correct beat*.

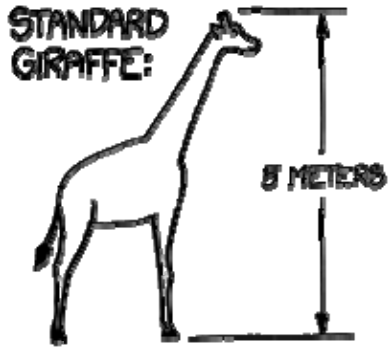
We seem to be much better at throwing things forward than throwing them upward. Since we're going for maximum height, we could use projectiles that curve upward when you throw them forward; the Aerobie Orbiters I had when I was a kid often got stuck in the highest treetops. But we could also sidestep the whole problem by using a device like this one:



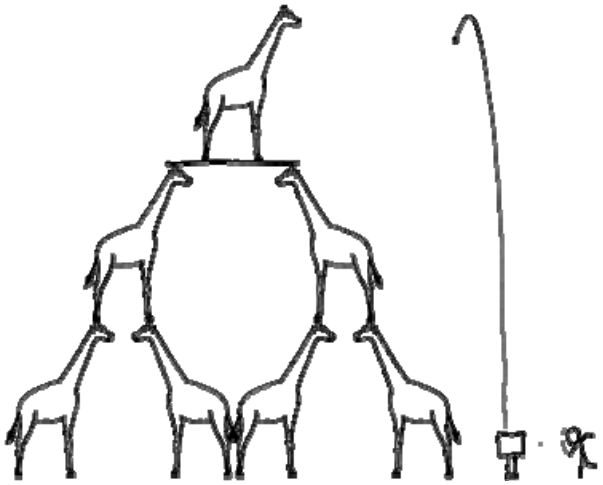
It could be a springboard, a greased chute, or even a dangling sling—anything that redirects the object upward without adding to—or subtracting from—its speed. Of course, we could also try this:

But the deflector box seems easier.

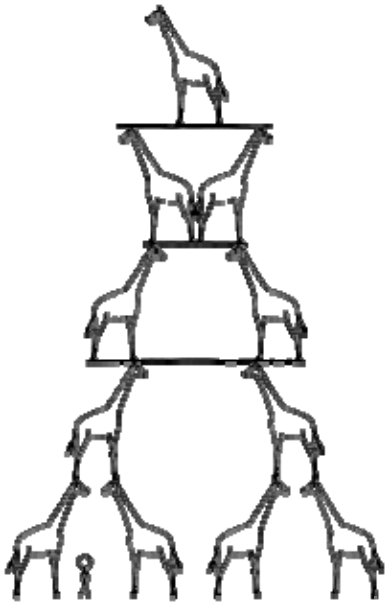
I ran through the basic aerodynamic calculations for a baseball thrown at various speeds. I will give these in units of giraffes:



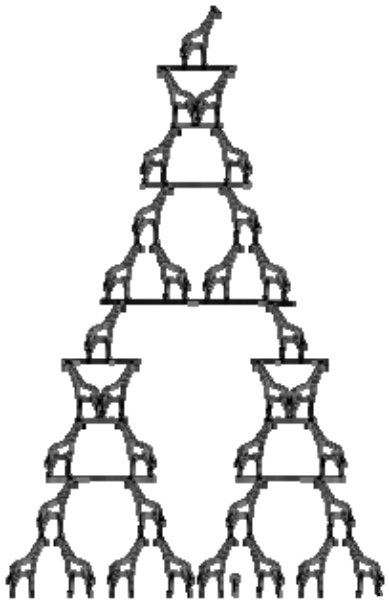
The average person can probably throw a baseball at least three giraffes high:



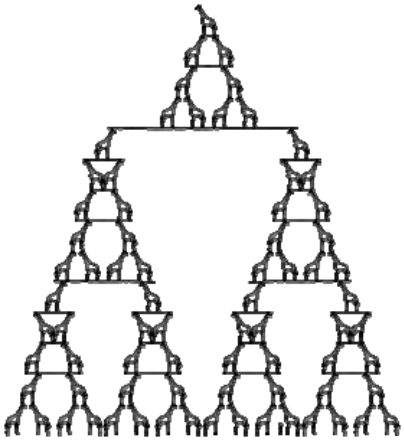
Someone with a reasonably good arm could manage five:



A pitcher with an 80 mph fastball could manage ten giraffes:



Aroldis Chapman, the holder of the world record for fastest recorded pitch (105 mph), could in theory launch a baseball 14 giraffes high:



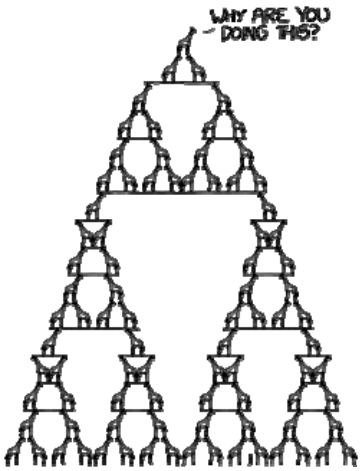
But what about projectiles other than a baseball? Obviously, with the aid of tools like slings, crossbows, or the curved *xistera* scoops in jai alai, we can launch projectiles much faster than that. But for this question, let's assume we stick to bare-handed throwing.

A baseball is probably not the ideal projectile, but it's hard to find speed data on other kinds of thrown objects. Fortunately, a British javelin thrower named Roald Bradstock held a random object throwing competition, in which he threw everything from dead fish to an actual kitchen sink. Bradstock's experience gives us a lot of useful data (and a lot of other data, too). In particular, it suggests a potentially superior projectile: A golf ball.

Few professional athletes have been recorded throwing golf balls. Fortunately, Bradstock has, and he claims a record throw (to first contact with the ground) of 170 yards.[7] This involved a running start, but even so, it's reason to think that a golf ball might work better than a baseball. It makes sense; the limiting factor in baseball pitches is the torque on the elbow, and the lighter golf ball might allow the pitching arm to move slightly faster.

The speed improvement from using a golf ball instead of a baseball would probably not be very large, but it seems plausible that a professional pitcher with some time to practice could throw a golf ball faster than a baseball.

If so, based on aerodynamic calculations, Aroldis Chapman could probably throw a golf ball about sixteen giraffes high:



This is probably about the maximum possible altitude for a thrown object.

… unless you count the technique by which any five-year-old can beat all these records easily:

Nature

The big fat truth

More and more studies show that being overweight does not always shorten life — but some public-health researchers would rather not talk about them.

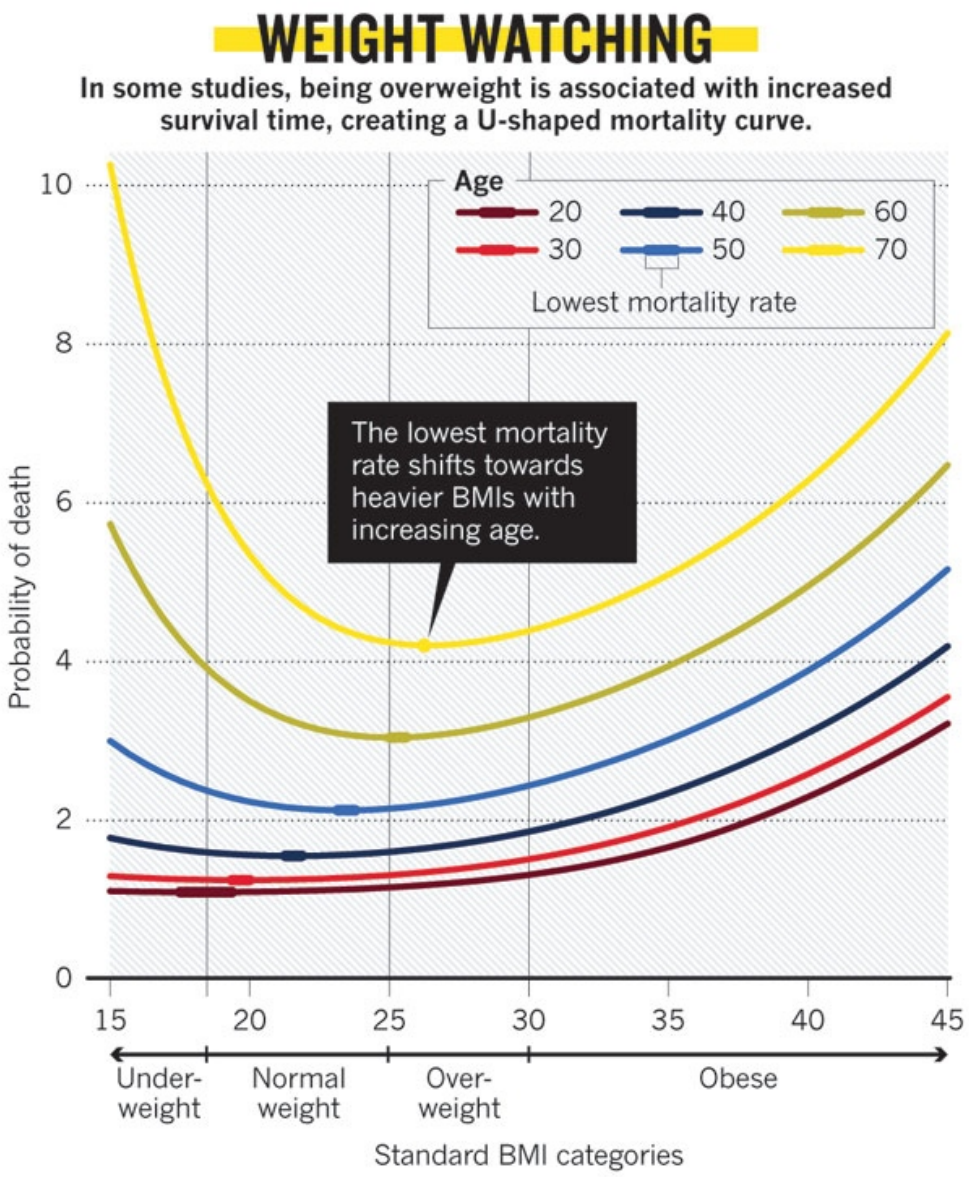
by Virginia Hughes

Late in the morning on 20 February, more than 200 people packed an auditorium at the Harvard School of Public Health in Boston, Massachusetts. The purpose of the event, according to its organizers, was to explain why a new study about weight and death was absolutely wrong.

The report, a meta-analysis of 97 studies including 2.88 million people, had been released on 2 January in the *Journal of the American Medical Association* (*JAMA*)[1]. A team led by Katherine Flegal, an epidemiologist at the National Center for Health Statistics in Hyattsville, Maryland, reported that people deemed 'overweight' by international standards were 6% less likely to die than were those of 'normal' weight over the same time period.

The result seemed to counter decades of advice to avoid even modest weight gain, provoking coverage in most major news outlets — and a hostile backlash from some public-health experts. “This study is really a pile of rubbish, and no one should waste their time reading it,” said Walter Willett, a leading nutrition and epidemiology researcher at the Harvard school, in a radio interview. Willett later organized the Harvard symposium — where speakers lined up to critique Flegal's study — to counteract that coverage and highlight what he and his colleagues saw as problems with the paper. “The Flegal paper was so flawed, so misleading and so confusing to so many people, we thought it really would be important to dig down more deeply,” Willett says.

But many researchers accept Flegal's results and see them as just the latest report illustrating what is known as the obesity paradox. Being overweight increases a person's risk of diabetes, heart disease, cancer and many other chronic illnesses. But these studies suggest that for some people — particularly those who are middle-aged or older, or already sick — a bit of extra weight is not particularly harmful, and may even be helpful. (Being so overweight as to be classed obese, however, is almost always associated with poor health outcomes.)



The paradox has prompted much discussion in the public-health community — including a string of letters in *JAMA* last month[2] — in part because the epidemiology involved is complex, and eliminating confounding factors is difficult. But the most contentious part of the debate is not about the science per se, but how to talk about it. Public-health experts, including Willett, have spent decades emphasizing the risks of carrying excess weight. Studies such as Flegal's are dangerous, Willett says, because they could confuse the public and doctors, and undermine public policies to curb rising obesity rates. “There is going to be some percentage of physicians who will not counsel an overweight patient because of this,” he says. Worse, he says, these findings can be hijacked by powerful special-interest groups, such as the soft-drink and food lobbies, to influence policy-makers.

But many scientists say that they are uncomfortable with the idea of hiding or dismissing data — especially findings that have been replicated in many studies — for the sake of a simpler

message. “One study may not necessarily tell you the truth, but a bulk of studies saying the same thing and being consistent, that really is reinforcing,” says Samuel Klein, a physician and obesity expert at Washington University in St Louis, Missouri. “We need to follow the data just like the yellow brick road, to the truth.”

Throwing a curve

The notion that excess weight hastens death can be traced back to studies from the US insurance industry. In 1960, a thick report based on data from policy-holders at 26 life-insurance companies found that mortality rates were lowest among people who weighed a few kilograms less than the US average, and that mortality climbed steadily with weight above this point. This spurred the Metropolitan Life Insurance Company (MetLife) to update its table of 'desirable weights', creating standards that were widely used by doctors for decades to come.

In the early 1980s, Reubin Andres, who was the director of the US National Institute on Aging in Bethesda, Maryland, made headlines for challenging the dogma. By reanalysing actuarial tables and research studies, Andres reported that the relationship between height-adjusted weight and mortality follows a U-shaped curve. And the nadir of that curve — the weight at which death rates are lowest — depends on age (see 'Weight watching'). The weights recommended by MetLife may be appropriate for people who are middle-aged, he calculated, but not for those in their 50s or older[3], who were better off 'overweight'. It was the first glimmer of the obesity paradox.

“We need to follow the data just like the yellow brick road, to the truth”

Andres's ideas were roundly rejected by the mainstream medical community. In an often-cited *JAMA* paper[4] published in 1987, for example, Willett and JoAnn Manson, an epidemiologist at the Harvard School of Public Health, analysed 25 studies of weight–death relationships and claimed that most were tainted by two confounders: smoking and sickness. Smokers tend to be leaner and die earlier than non-smokers, and many people who are chronically ill also lose weight. These effects could make thinness itself seem to be a risk.

Manson and Willett backed up that idea in a 1995 report that analysed body-mass index (BMI) — the 'gold-standard' measure of weight, defined as weight in kilograms divided by height in metres squared — in more than 115,000 female nurses enrolled in a long-term health study[5]. When the researchers excluded women who had ever smoked and those who died during the first four years of the study (reasoning that these women may have had disease-related weight loss), they found a direct linear relationship between BMI and death, with the lowest mortality at BMIs below 19. (That is about 50 kilograms for a woman who is 1.63 metres tall.)

“It didn't seem to be biologically plausible that overweight and obesity could both increase the risk of life-threatening diseases and yet lower mortality rates,” Manson says. The study proved, she says, that this idea “was more artefact than fact”.

Around the same time, the world was waking up to obesity. Since 1980, rates of overweight and obesity had begun to rocket[6, 7, 8], and in 1997, the World Health Organization (WHO) held its first meeting on the subject, in Geneva, Switzerland. That meeting resulted in the introduction of new criteria for 'normal weight' (BMI of 18.5–24.9), 'overweight' (BMI of 25–29.9) and 'obese' (BMI of 30 or higher). In 1998, the US Centers for Disease Control and Prevention (CDC) lowered its

BMI cut-offs to match the WHO's classifications. “We used to call [obesity] the Cinderella of risk factors, because nobody was paying attention to it,” says Francisco Lopez-Jimenez, a cardiac physician at the Mayo Clinic in Rochester, Minnesota. They were now.

Statistical sparring

Flegal was one of those raising the alarm. At the statistics centre, which is part of the CDC, she has at her fingertips data from the agency's National Health and Nutrition Examination Survey (NHANES). Based on interviews and physical examinations of about 5,000 people a year, the NHANES has been running since the 1960s. Flegal and her colleagues used it to show that rates of overweight and obesity in the United States were climbing[6, 7].

In 2005, however, Flegal found that NHANES data confirmed Andres's U-shaped mortality curve. Her analysis showed that people who were overweight — but not obese — had a lower mortality rate than those of normal weight, and that the pattern held even in people who had never smoked[9].

Flegal's study got a lot of press, says Willett, because she works at the CDC and it seemed to be a sanction for gaining weight. “A lot of people interpreted this as being the official statement of the US government,” he says. Just as they did earlier this year, Willett and his colleagues criticized the work and put together a public symposium to discuss it. The academic kerfuffle drew a lot of negative media attention to Flegal's study. “I was pretty surprised by the vociferous attacks on our work,” says Flegal, who prefers to focus on the finer points of epidemiological number-crunching, rather than the policy implications of the resulting statistics. “Particularly initially, there were a lot of misunderstandings and confusion about our findings, and trying to clear those up was time-consuming and somewhat difficult.”

Over the next few years, other researchers found the same trend, and Flegal decided to carry out the meta-analysis that she published earlier this year[1]. “We felt it was time to put all of this stuff together,” she says. “We might not understand what it all means, but this is what's out there.” Her analysis included all prospective studies that assessed all-cause mortality using standard BMI categories — 97 studies in total. All the studies used standard statistical adjustments to account for the effects of smoking, age and sex. When the data from all adult age groups were combined, people whose BMIs were in the overweight range (between 25 and 29.9) showed the lowest mortality rates.

The Harvard group contends, however, that Flegal's approach did not fully correct for age, sickness-related weight loss and smoking. They say that the effect would have vanished in younger age groups if Flegal had separated them out. They also argue that not all smokers have the same level of exposure — people who smoke heavily tend to be leaner than occasional smokers, for example — so the best way to remove smoking as a confounder is to focus on people who have never smoked. Willett points to one of his studies[10], published in 2010, that was not included in Flegal's analysis because it did not use standard BMI categories. Analysing data from 1.46 million people, Willett and his colleagues found that among people who have never smoked, the lowest mortality occurs in the 'normal' BMI range, of 20–25.

Flegal, in turn, criticizes the Willett study for scrapping large swathes of the raw data set: nearly 900,000 people in all. “Once you delete such large numbers, and they are really large, you don't quite know how the never-smokers in the sample differ from the others,” she says. Never-

smokers could be richer or more educated, for example. What is more, says Flegal, Willett's study relies on participants' self-reported heights and weights, rather than objective measures. “It's a huge deal,” Flegal says, because people tend to underestimate how much they weigh. This could skew death risks upwards if, for example, people who are obese and at high risk say that they are merely overweight.

Healthy balance

Many obesity experts and health biostatisticians take issue with the harsh tone of Willett's statements about Flegal's work. They say that there is merit in both Willett's and Flegal's studies, that the two are simply looking at data in different ways and that enough studies support the obesity paradox for it to be taken seriously. “It's hard to argue with data,” says Robert Eckel, an endocrinologist at University of Colorado in Denver. “We're scientists. We pay attention to data, we don't try to un-explain them.”

What they are trying to explain is the reason for the paradox. One hint lies in the growing number of studies over the past decade showing that in people with serious illnesses such as heart disease, emphysema and type 2 diabetes, those who are overweight have the lowest death rates. A common explanation is that people who are overweight have more energy reserves to fight off illness. They are like contestants on the television show *Survivor*, says Gregg Fonarow, a cardiologist at the University of California, Los Angeles: “Those that started off pretty thin often don't come out successful.”

Metabolic reserves could also be important as people age. “Survival is a balance of risks,” says Stefan Anker, a cardiology researcher at Charité Medical University in Berlin. “If you are young and healthy, then obesity, which causes problems in 15 or 20 years, is relevant,” he says. With age, though, the balance may tip in favour of extra weight.

Genetic and metabolic factors may also be at play. Last year, Mercedes Carnethon, a preventive-medicine researcher at Northwestern University in Chicago, Illinois, reported that adults who develop type 2 diabetes while they are of normal weight are twice as likely to die over a given period as those who are overweight or obese[11]. Carnethon says that the trend is probably driven by a subset of people who are thin yet 'metabolically obese': they have high levels of insulin and triglycerides in their blood, which puts them at a higher risk for developing diabetes and heart disease.

All this suggests that BMI is a crude measure for evaluating the health of individuals. Some researchers contend that what really matters is the distribution of fat tissue on the body, with excess abdominal fat being most dangerous; others say that cardiovascular fitness predicts mortality regardless of BMI or abdominal fat. “BMI is just a first step for anybody,” says Steven Heymsfield, an obesity researcher and the executive director of the Pennington Biological Research Center in Baton Rouge, Louisiana. “If you can then add waist circumference and blood tests and other risk factors, then you can get a more complete description at the individual level.”

If the obesity-paradox studies are correct, the issue then becomes how to convey their nuances. A lot of excess weight, in the form of obesity, is clearly bad for health, and most young people are better off keeping trim. But that may change as they age and develop illnesses.

Some public-health experts fear, however, that people could take that message as a general endorsement of weight gain. Willett says that he is also concerned that obesity-paradox studies could undermine people's trust in science. “You hear it so often, people say: 'I read something one month and then a couple of months later I hear the opposite. Scientists just can't get it right',” he says. “We see that time and time again being exploited, by the soda industry, in the case of obesity, or by the oil industry, in the case of global warming.”

Preventing weight gain in the first place should be the primary public-health goal, Willett says. “It's very challenging to lose weight once you're obese. That's the most serious consequence of saying there's no problem with being overweight. We want to have people motivated not to get there in the first place.” But Kamyar Kalantar-Zadeh, a nephrologist at the University of California, Irvine, says that it is important not to hide subtleties about weight and health. “We are obliged to say what the real truth is,” he says.

Flegal, meanwhile, says that the public's reaction to her results is not her primary concern. “I work for a federal statistical agency,” she says. “Our job is not to make policy, it's to provide accurate information to guide policy-makers and other people who are interested in these topics.” Her data, she says, are “not intended to have a message”.

Earth Science Picture of the Day.
Sunset at Dog Rocks

Photographer: Phil Thomson; Phil's Web site
The glorious twilight sky above was captured at Dog Rocks, Batesford, near Geelong, Australia on January 18, 2013.

Lapporten Mountain Gate

Photographer: Adam Whittaker
The photo above showing a distinct mountain gap in Abisko National Park was snapped on a trip to Lapland (Sweden) to produce a film on the aurora. It appears that a huge bite was taken out of the mountain. Known as the Lapporten Mountain Gate and Goose Valley, it's one of the most photographed natural landforms in Sweden.

Auroral Display of March 1, 2013

Photographer: Natalia Robba; Natalia's Web site
As shown above, a startling auroral display was witnessed by appreciative guests at the Abisko Mountain Lodge in Sweden, on the night of March 1, 2013


MEMORIAL
DAY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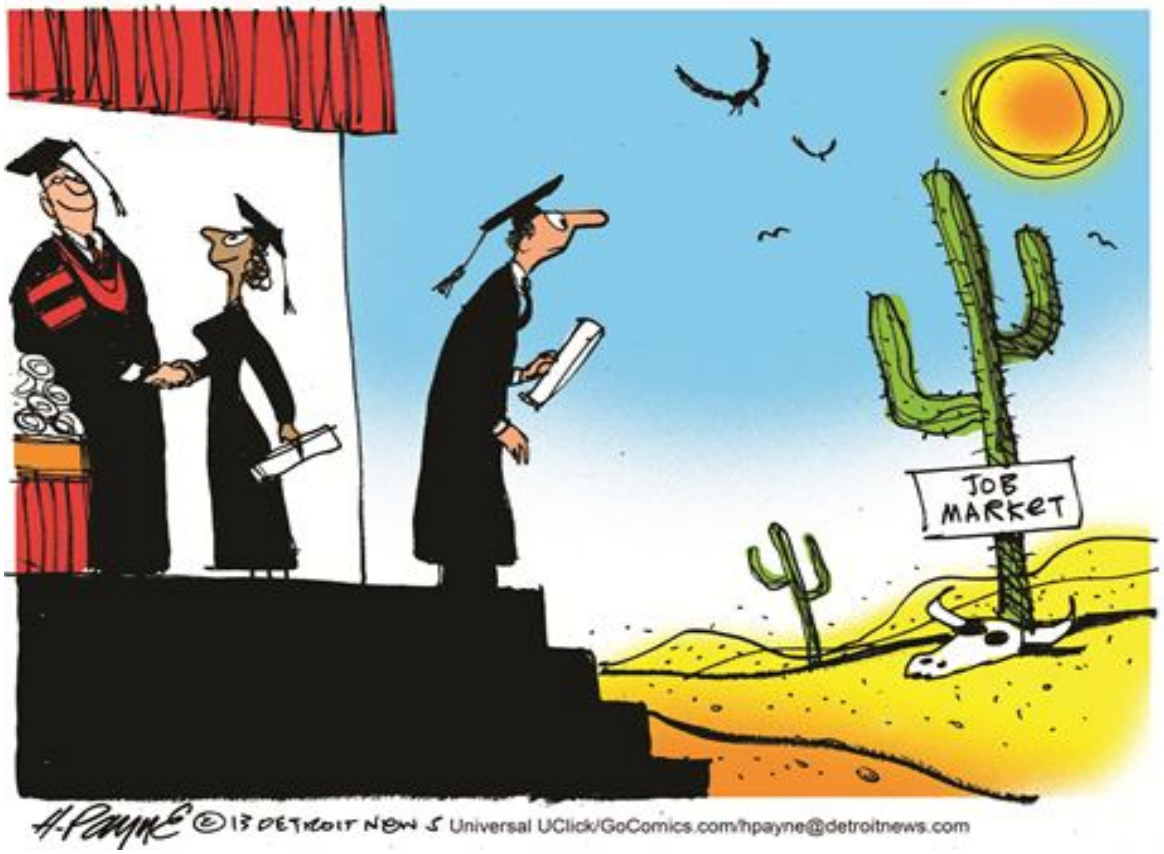
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