Mr. Wonka Out Of Business!

Most of us could probably survive without spinach, sprouts, or broccoli, but a world without chocolate? Now that would be hard! But if some of the world's largest chocolate manufacturers are to be believed, it could happen if we don't act soon.

According to the experts, the issue is two-fold - accelerating consumption ofhe sweet treat and a decline in the production of its main ingredient, cocoa.

With the residents of India and China rapidly gaining a taste for this decadent sweet, not much can be done about the first.

Therefore, the only thing we can do to ensure a steady supply of chocolate is to increase cocoa production However, that is not as easy as it sounds. In the last decade, a combination of drought and plant disease in Ivory Coast and Ghana, the world's largest producers, has reduced global cocoa yields by almost 40 percent. To make matters worse, many cocoa farmers are switching to more profitable and easier to grow crops such as corn or rubber.

Researchers are frantically trying to create new cocoa plants that are more resilient and have better yields. The epicenter of this effort is the recently opened International Cocoa Quarantine Centre, in Berkshire, England. Dubbed "Operation Wonka", the £1 million state-of-the-art facility will serve as the clearinghouse for all of the world's new cocoa plant varieties.

So what exactly does that mean? According to University of Reading researchers Paul Hadley and Andrew Daymond, the only way to restore cocoa production is by providing farmers with new disease-free plant varieties. The easiest way to do that would be to send them plants that are thriving in other cocoa-producing areas like Venezuela and Indonesia. However, there is a risk of introducing new diseases and pests. In order to prevent that all cocoa plants first make their way to the Berkshire Quarantine Center. Here, engineers are also trying to create new genetically stronger varieties, by incorporating attributes from different plants. For example, they could combine one that is resistant to fungus with one that has high yields. Though the risk of the world facing an acute chocolate shortage is far from over, with Willy Wonkas, Paul Hadley and Andrew Daymond at the helm, there is now hope of a scrumdidliumptious future.

Feeling Cold? ‘Let it Go’

Ever had goose bumps on your arms when viewing videos of the ALS Ice Bucket Challenge, or experienced a shiver crawl down your spine whilst watching Disney's amazing spectacular *Frozen*? Turns out there is a scientific explanation for that. According to British researchers just seeing someone shiver is enough to lower your body temperature by several degrees. While this phenomenon does not compare to Elsa’s powerful freezing capabilities, it sure proves that we all have a small amount of chilly magic, just waiting to be unleashed!

Researchers at Sussex Medical School began by asking thirty-six healthy adult volunteers to watch eight, three-minute videos. Four showed actors with a hand submerged in a bowl of icy water, while the remaining had their hand dipped in steaming hot water. The researchers measured the temperature of the volunteers' hands before and after each tape was viewed.

What they discovered was that watching the cold-water videos resulted in lowering the volunteers' hand temperature. However, the same was not true following the hot water or control videos.

So what makes the cold videos so contagious? According to Harrison, the key player in this phenomenon is a process known as inter-subjectivity - a person’s tendency to match up his or her physiology or psychology with that of another. Ever yawned after another person? That’s exactly what they are talking about.

According to the researcher, "Humans are profoundly social creatures and much of humans' success results from our ability to work together in complex communities - this would be hard to do if we were not able to rapidly empathise with each other and predict one another’s thoughts, feelings, and emotions."

Planets! Planets! And More Planets!

Astronomers working in Geneva have found nine new planets circling nearby stars. With this discovery, we now know of 50 extra-solar planets, also called exoplanets. That is a big increase from the 41 planets last known five years ago.
All these individual planets move in an orbit around a star, which is called their parent star (a bit like our sun). The astronomers estimate that the Beta Pictoris star has a planet ten times the mass of Earth. It orbits at a distance of about 10.5 billion kilometers, more than ten times the distance of the earth from the sun. And Vega, one of the brightest stars in the sky, appears to have a planet twice the mass of Jupiter, the largest planet in our solar system. This planet is 8 billion kilometers (that's 8,000,000,000 km) from its parent star. In comparison, our solar system seems almost tiny. The distance between Pluto, the farthest planet in our solar system and the sun is *just* 5.9 billion kilometers!
Besides these two planets, there are two others, which are as big as Saturn. These two orbit very close to their parent star. What is surprising is that one of them takes just 2.98 days to complete their orbit and the other takes 29.8 days. Now the astronomers have to put on their thinking caps to figure out why one circles the star exactly ten times faster than the other!

Since many extra solar planets are too far away to see directly, astronomers must detect extrasolar planets by carefully watching the stars to see if they "wobble". Just like how the moon's gravity effects Earth, any large object orbiting a star will pull at the star, causing the star to move slightly and "wobble" the light coming from it. This "wobbly" light is what allows astronomers to detect new planets

Several of these stars now seem to show unexplained wobble behaviour, a condition that many scientists think is evidence for second and even third planets orbiting them. Geoff Marcy of San Francisco State University told the BBC: "The planets we are finding around other stars, all orbit in elongated, elliptical orbits. It's quite frightening that virtually all planets that we have found orbit close to their stars where they heat up and then move out to where they cool down."

But what about life on these extrasolar planets? Unfortunately, most of these planets are too close to their parent stars meaning water (an essential component for life) would simply boil away. Oh well, perhaps we will find E.T. on Kepler-186f instead.

Jupiter's New Moon?

Does Jupiter, the largest planet in the solar system, have a 17th moon? Astronomers seem to think it does.
Last year, astronomers at the University of Arizona and a Massachusetts Observatory discovered what looked like a new moon around Jupiter. They had been scanning the skies for comets and asteroids as part of a spacewatch programme. In fact, when they saw the new moon, they thought it might be a comet or an asteroid.

A comet is a small body of ice and dust that orbits the Sun. When it approaches the Sun, the ice in it vaporises and forms a head and a tail. This object around Jupiter looked nothing like one, though it moved in an elongated orbit like a comet. It looked even less like an asteroid, which is a small rocky body that orbits the Sun. In the solar system, asteroids exist in a wide belt between Mars and Jupiter.

If the new object was neither a comet nor an asteroid, what was it? The scientists were in a fix. They realised what it was only only last month when they observed its orbit.
The orbit is the path that every object in the solar system takes while revolving around another object. And every object has a particular kind of orbit. Asteroids have one. Moons have another. Planets have yet another. It is possible to say what exactly an object in the solar system is by calculating the number of days it takes to go round its orbit. When the scientists made the orbital calculations of the new object, they realised it was not an asteroid, nor was it a comet. It was actually a new moon around Jupiter that had not been noticed before.
But, the scientists are still not sure, and they will not be for a few more months. For, Jupiter and its moons are too close to the Sun right now. And, that is why the scientists have not assigned a permanent name for the moon. It is still known by the number it was allotted when it was first discovered — S/1999J.
The new moon has a diameter of only 5 km, which means that the walk from one end of the moon to the other is only 5 km. It is Jupiter's smallest moon. Actually, it is the smallest moon in the solar system. Before the new moon was found, the Jupiter's smallest known moon was Leda, which is about 8 to 16 km. in diameter. This is not the first time that one of Jupiter's moons is causing a stir. Some time ago, it was found out that one of its biggest moons, Io, actually does a lot of stirring and shaking. In the entire solar system, it is the only moon, which is more volcanically active than earth.

Beautiful Butterflies: More than meets the eye

For humans seeing butterflies fluttering around with their beautiful brightly coloured wings is a joyful sight. However, not for their natural predators: lizards, spiders, and birds. To them, the vibrant hues are a reminder of a bad-tasting species that are best avoided. For those not easily duped, some butterflies also have eyespots on their wings. According to researchers, this tricks would-be predators into thinking that the insect is a larger animal, like an owl.
If that is not enough to impress you, how about this? The smart insects have different colours and scaled patterns on the underside of their wings. This enables them to blend in with the leaves or tree bark while resting. And there is more! Some species of butterflies even have ultraviolet patterns that are visible only to other butterflies, a trick that helps them seek out the perfect mates!

Moreover, in many species such as Asia's paper kite butterflies, the deception starts early. With its off-white/yellow wings, this species is not amongst the most attractive butterfly. However, its chrysalis — the hard protective covering that houses the caterpillar as it develops into a butterfly, is a gorgeous shiny golden colour. According to Katy Prudic, biologist at Oregon State University, the shine of the chrysalis is an ingenious camouflage. Prudic says the brightness of the chrysalis is difficult for predators to spot against what she describes as a "complicated background." The researcher speculates that the shiny exterior also protects the chrysalis from birds who mistake it for a drop of water.

The paper kite isn't the only one that boasts a great camouflage. The giant swallowtail butterfly is also a master of disguise. Its chrysalis looks like part of the tree from which it dangles. Depending on how you look at it, the chrysalis may even take on the appearance of a tiny snake.
The beautiful monarch butterflies are the masters of disguise at all stages. The chrysalis sports golden dots and threads to help it blend seamlessly into the leaves. As adults, the wings take on a dangerous orange colour and unique patterns that alert predators to its foul taste that can prove harmful to some. The monarch's camouflage is so effective that the viceroy butterflies have also adapted it.

While camouflage is important for the adult insects, it is even more so when they are in the chrysalis stage. Trapped inside the hard shell, the insects need all the help they can get given that they are unable to flee from creatures looking to eat or parasitise them. A chrysalis that blends in gives the fledgling butterfly the chance to grow within its case without the constant worry of predator attacks.
So the next time you spy butterflies, remember that the vibrantly coloured wings are not just for "good looks." They serve a bigger, more important purpose - helping the insects avoid becoming the main course on a predator's menu.

Quiz Time

1 *What are the various ways in which the colour of wings help butterflies?*
2 *What is a chrysalis? How does the shiny gold colour of the paper kite butterfly's chrysalis help protect it?*
3 *Why is camouflage so important to a butterfly chrysalis? Why does the author call the monarch butterfly the "masters of disguise?"*

Back From Extinction! (Not quite)

Despite being one of the most famous dinosaur names on the planet - the name Brontosaurus has not actually been used by experts for over 100 years.
Back in 1903, scientists decided that the dinosaur that was known as Brontosaurus was too similar - because of it's long neck -to another species called the Apatosaurus. So the Brontosaurus was declared extinct because they were both thought to be from the same species.
Now a team of experts from Portugal have decided they did show enough differences to be classed as two different species. So Brontosaurus is back!
The problems began at the end of the 1800s.The general public were really interested in dinosaurs, and so people in America raced against each other to find new fossils and discover new species.
It was known as 'the bone wars', and fossil hunters were desperate to get their names in the record books by naming new dinosaurs. On one expedition in the US, Othniel Charles Marsh and his team discovered fossils of what they thought were two long-necked dinosaurs.
They called one Apatosaurus, and one Brontosaurus. But later, a museum in America decided those two fossils were actually the same species. And so Apatosaurus stuck...and Brontosaurus was no more.

Science Rocks!

Is this cat walking up or down the stairs?

This optical illusion picture of a cat has had lots of people online, asking: is the cat moving up, or down the stairs?

It's being compared to the **famous blue/black dress** that went viral early this year, when some people saw different colours in the same photo.
Because of the way the light falls on the stairs, there aren't many other clues in the picture to help the brain decide whether it's going up or down. Can you use your science skills to solve it?

Riddle me this...

What has a mouth but doesn't speak, has a bed but never sleeps?

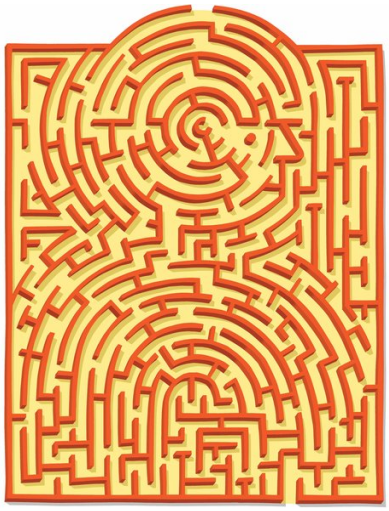
What lives when you feed it but dies when you give it something to drink?

1.)
2.)
3.)

LOL!!!

What did the limestone say to the geologist?
Why was the bee's hair sticky?
How do you stop an astronauts baby from crying?

1.) "Don't take me for Granite!"
2.) Because it used a honeycomb
3.) You rocket



Just how fast does your brain work? Solve this in 12 seconds or less and you're a GENIUS!

The Mad Scientist

A round up of the weird, wacky and wonderful world of Science

Issue 1: Mr. L