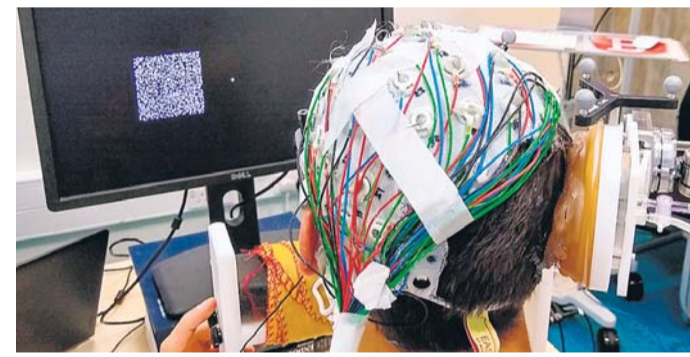


#RESEARCH

Ultrasound, Aimed At Brain, Can Relieve Pain

What if you could ease pain by non-invasively manipulating a spot inside your brain, where pain is registered?



Arrowly focused sound waves, aimed at an area of the brain called the insula, reduced both the perception of pain and the body's reaction to it, according to a new study.

You feel a pain, so, you pop a couple of *ibuprofen* or *acetaminophen*. If the pain is severe or chronic, you might be prescribed something stronger, an opioid painkiller, that can be addictive under some circumstances.

But what if you could ease pain by non-invasively manipulating a spot inside your brain, where pain is registered?

The new study by Wynn Legon, assistant professor at the Fralin Biomedical Research Institute at Virginia Tech, and his team points to that possibility.

"This is a proof-of-principle study," Legon says. "Can we get the focused ultrasound energy to that part of the brain and does it do anything? Does it change the body's reaction to a painful stimulus to reduce your perception of pain?"

Focused ultrasound uses the same technology which is used to view a baby in the womb but it delivers a narrow band of sound waves to a tiny point. At high intensity, ultrasound can ablate tissue.

At low-intensity, it can cause gentler, transient biological effects, such as altering nerve cell's electrical activity.

Neuroscientists have long studied how non-surgical techniques, such as transcranial magnetic stimulation, might be used to treat depression and other issues. Legon's study however, is the first to target the 'insula' and show that 'focused ultrasound' can reach deep into the brain to ease pain.

The study involved 23 healthy human participants.



Chase 'The High Of Being Horrified'

Even though, it is a *crime thriller* in the true spirit, 'Holly' seamlessly embraces the 'eerie aesthetic' that Stephen King is celebrated for. What further caters to the taste of readers, who chase the 'high of being horrified,' is King's haunting narration and his prowess in building characters with kindness, only to lead them to gruesome ends.



A few months ago, I stumbled upon a YouTube channel, run by New York Times bestselling author Jerry Jenkins. As I went down the rabbit hole of his enthralling lessons on how to be a better writer, I came across one particular video, where he talks about what kind of writer Stephen King is, calling him someone who "writes by the seat of his pants." In other words, writers as such are not known for their pre-planned plots or detailed outlines. Their brilliance of "writing" comes from letting their characters and settings lead them towards revelation instead of a pre-determined ending.

This short description of the writing style of the 'king of horror' finds a perfect representation in his latest novel, *Holly*.

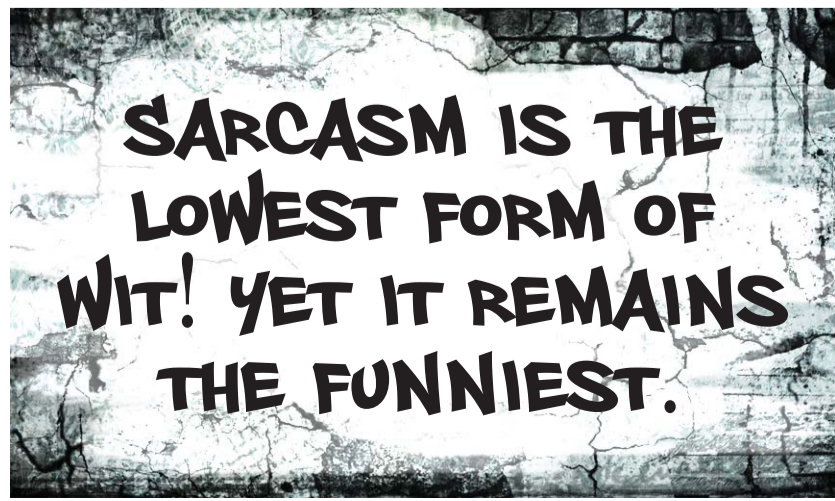
Civilised villains of modern times

Once you are introduced to Emily and Rodney Harris in *Holly*, you may quickly be reminded of the bourgeois, well-educated and sophisticated antagonists, that we have met (and collectively, hated), so many times before. Remember Missy and Dean Armitage from *Get Out*?

Emily and Rodney Harris, in *Holly*'s universe, used to be professors of English and Life Science, respectively, at the fictitious Bell College, Arts and Sciences, in Ohio. Now, in their eighties, they are respected members of society, seemingly living a peaceful life of retirement, in their Victorian home "with impeccable paint jobs, bow windows and lots of gingerbread trim." It is important for these character traits



THE WALL



Holly barges into uncomfortable debates with an exuberant audacity

From the get-go, *Holly* strikes the right chord with its readers. While Stephen King has never been reluctant about expressing his political views, this thriller novel takes things a step further, to antagonise all the right people.

Holly is, by far, King's most political novel so far, spanning some of

the top scandals that raged in the US (and around the world, by extension) amid the pandemic. What sets it further apart from the noise is how Holly dives headfirst into these contentious debates, all from the conspiracy theories, surrounding the COVID vaccinations to the riots that erupted in the US Capitol build-

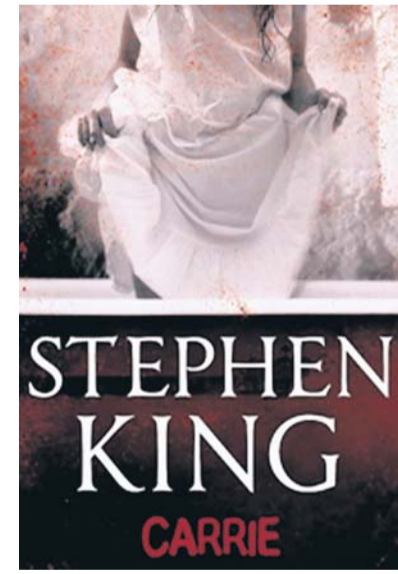
ing on January 6, 2021, with almost an amused sense of recklessness. King, himself, charges into his new novel with this same abandon when he, instead of going down the well-travelled thriller-writing path of a big revelation in the end, chooses to reveal the identities of the villains in the very first chapter.

Emily and Rodney Harris hold a stark difference. They are an elderly, timid-looking couple who live with certain physical limitations. This is exactly why their monstrosities come off as more 'terrifying.'

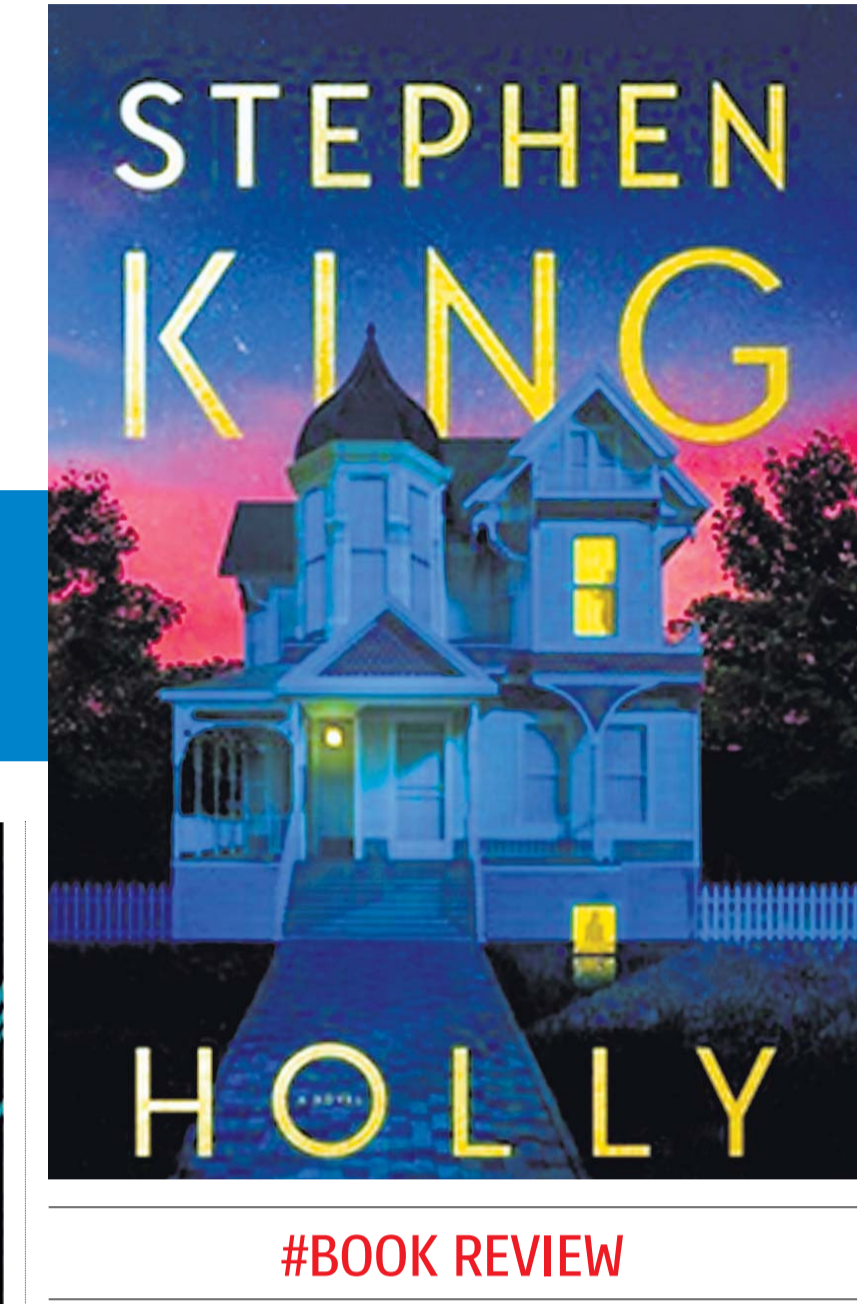
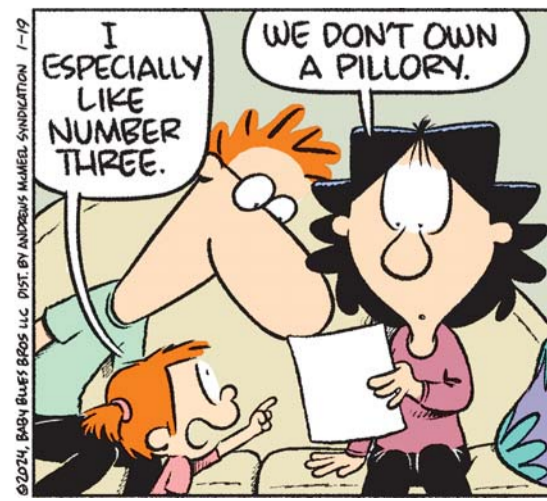
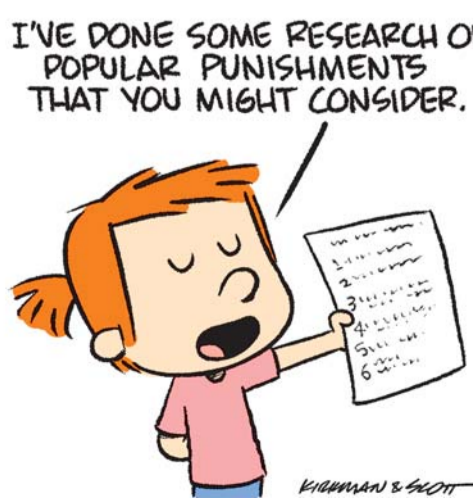
Unlike most of his other antagonists, King pulls out the ghastly sides of the *Harris*s, by means of realistic situations, which are very palpable in the current times that we live in. For instance, Emily Harris is not a monster who lures children into the sewers. She is a retired professor of literature, who can be seen having a jovial discussion with a young black poet while muttering racial slurs to herself in private. And due to this very methodically built social image, that conceals their deep-seated racist and homophobic beliefs, no one seems to suspect the reality that lurks in the basement of their prim and proper home, "a cage for their human victims."

The presence of this hidden cage, paired with some of the character traits of the octogenarian couple, may also remind the readers of *Joe Goldberg* from *You*, the well-read, good-looking and charming antagonist of Caroline Kepnes's best-selling novel, that has now been made into a blockbuster Netflix show.

As we saw with the Armitages and their friends in *Get Out* (and, to some extent, with Goldberg in *You*), the *Harris*s are not only inherent monsters, who wear their education and affluence like a façade but are also vehemently in denial about their monstrosities, believing that



BABY BLUES



Holly Gibney returns with not a bang but a haunting beat

#BOOK REVIEW

We first meet private investigator *Holly Gibney* in *Mr. Mercedes*, King's 2014 award-winning novel, which was the first instalment of the *Bill Hodges Trilogy*. She does not make an appearance until page 219, and when she does, she comes off as a peripheral character who "never speaks above a mutter and seems to have a problem making eye contact."

Holly remains the insecure, anxiety-ridden, Lexapro-reliant young woman with mommy issues, all through *Mr. Mercedes* and its sequel, *Finders Keepers*.

However, as the series progresses, Holly can be seen gradually shedding her insecurities and gaining depth. Finally, as she takes centre stage in King's latest novel, which is named after her, she emerges as a multi-dimensional character that seems to have been intricately crafted for this role, right from the very beginning. But the truth is, King never intended *Holly* to be this important. He has shared that she "was supposed to be a walk-on character in *Mr. Mercedes*." However, he noted that King "just kind of stole the book and stole my heart." And I, for one, am glad about it.

In the latest novel, we find Holly in a place where many of us had been amid the pandemic, a funeral. We learn that her mother, Charlotte, had "attended an anti-mask rally in the state capital, waving a sign reading MY BODY, MY CHOICE (a sentiment that did not keep her from being adamantly anti-abortion)." Weeks later, she was dead from COVID-19. The story, infact, develops on the backs of many deaths, most of which are caused by the coronavirus. But while shining a light on a real-world tragedy, through the lens of fiction, King makes it a point to draw a vivid contrast between the likes of informed folks and those misled by propaganda. While Charlotte is remembered for her beliefs that the pandemic and the COVID-19 vaccines were hoaxes, *Holly* is seen to be fastidious with her masks and gloves, even if it comes at the cost of being ridiculed.

Aside from the main investiga-

Holly's investigation leads readers to a mirror

While *Holly* is attending her mother's funeral, she gets a telephone call from a woman named *Penny Dahl*, who wants her help in finding her missing daughter, *Bonnie Rae Dahl*. We learn, was last seen at the Red Bank Avenue, a run-down stretch of storage units, warehouses and vacant lots. Her mysterious disappearance is only marked by her abandoned bike and a note that says she "has to go home."

Holly is initially reluctant about accepting the case but then changes her mind, upon seeing the desperation of *Bonnie Rae's* mother. But she is left to work on her own as her partner, *Pete*, is down with COVID-19. This, coupled with the recent death of her mother and the many hindrances imposed by the pandemic, makes solving the case, even more tricky, for Holly. The initial chapters of the book quickly take its readers through a series of abductions that *Emily* and *Rodney Harris* have carried out, since 2012. This automatically places the readers in the awkward position of knowing more than the novel's prime investigator. I personally have always had misgivings about this format of story construction when it comes to crime thrillers. Perhaps, it is the lingering after-effect of watching *Ghughghatpur Ghatorna*. Based on a short story by Satyajit Ray (for the *Feluda* series), filmmaker Sandip Ray went against his father's storyline

and chose to reveal the death, the perpetrator and the impostor, right at the beginning of the movie in the form of a prologue. Thus, the audience was left watching beloved private investigator *Prodhosh Mitra* (aka *Feluda*) play catch up with us and solve a parrot's parrot riddle.

But Stephen King has his way of keeping his "readers on their toes" despite their already knowing who the perp is. It is like watching an acrobat take off on his trapeze, without a safety net. You may be taken aback, but when he lands on his feet like the pro he is, you realise that he knows his stuff. As she delves deeper into *Bonnie Rae's* disappearance, *Holly* stumbles upon another missing person's case, that of a young boy. Soon, she is convinced that the two cases are related, and she is pushed to her limits to use every tool she has in her arsenal to find answers.

The timeline of *Holly's* investigation coincides with the rising cases of COVID-19. Through her eyes, we are brought face-to-face again with the worst bouts of the pandemic, when the hospitals were overflowing with patients and the morgues were piling up with bodies. The words that King uses to describe this scenario, through *Holly*, hit hard.

"When this is over," *Holly* thinks, "no one will believe it happened. Or if they do, they won't understand how it happened."

What makes Holly a gripping read

In such a dark setting, King, sometimes, points his readers towards the proverbial 'light at the end of the tunnel' with nuggets that show how *Holly* "likes to think she doesn't get" but "believes that there's a kind of 'providence at work' in matters of right and wrong, blind but powerful, like that stupid old 'Lady Justice holding out her scales.'" King's characters, especially those of men and women, standing on the side of the weak and unsuspecting, and against evil. But at the same time, the toll that *Holly's* job as a private investigator has on her mirrors, the exhaustion that makes her feel in our daily work lives in the so-called hamster wheel. You may be able to see your own daydreams of running away in *Holly's fantasies* of living a different life, one where killers "would only be cable news fodder, which could be muted or turned off in favour of a rom-com."

It is this relatability that makes *Holly Gibney* stand out to me, especially among the string of fictional investigators that I have fallen in love with, over the years. She is not fanatic about her cases like *Sherlock Holmes*, unaffected by the horrors of her job like *Feluda*, or even borderline gleeful about solving murder mysteries like *Bloddy Mabel*. *Holly* is excellent

at what she does and diligent about how she does it, but she feels relatable (and more real) because she has her limits and boundaries. *Holly's* vulnerability and the "human side" she faces, may, at times, make the readers wonder if she is a match for the experienced and patient villains of the novel. That is exactly what makes *Holly* a gripping read.

Character's from Stephen King's *Mr. Mercedes Trilogy* appear in significant roles in *Holly*, adding depth to the narrative. Siblings *Jerome* and *Barbara Robinson*, each undergo their own compelling story arcs, hinting at possible future appearances. Although *Bill Hodges*, the man who nudged *Holly* into a career of private investigation, passed away in the previous books due to cancer, he is a haunting presence throughout the novel, resonating in *Holly's* memory and learnings. Such is his influence on her that his advice encapsulates the essence of the story as the epigraph, "Sometimes the universe throws you a rope."

Holly, guided by this metaphorical rope, embarks on a journey that leads to a climactic confrontation with *Emily* and *Rodney Harris*. Through this confrontation, readers witness the dark depths of 'college professors' depravity' in *Stephen King's* distinctive narrative style.

A testament to King's narrative finesse

Even though it is a *crime thriller* in true spirit, *Holly* seamlessly embraces the 'eerie aesthetic' that *Stephen King* is celebrated for. The terrors that take place within the confines of *Rodney* and *Emily Harris's* basement, and what follows after, are as good as any supernatural horror to keep you up at night. What further caters to the taste of readers who chase the 'high of being horrified,' is King's haunting narration and his prowess in building characters with kindness, only to lead them to gruesome ends.

The mystery of the disappearances and the *Harris*s' secret build a suspense "that is eerie enough on its own." But King went a step further and added the looming presence of a killer pandemic, which further sinks the novel in a

constant state of poignancy. But the heart of the narrative in this novel lies in *Holly*, who undergoes remarkable growth, going from the timid character introduced in *Mr. Mercedes* to a sharp and resilient detective. King's brilliance 'as a writer' is evident in this transformation, showcasing how characters can evolve beyond initial conceptions. *Holly's* evolution is a testament to King's narrative finesse and a compelling call for more stories, featuring *Holly*, in the future.

As humans, we often grapple with confronting the darkest aspects of humanity, much like the characters in the story. This exploration can leave us both, strengthened and saddened, reflecting the complexity of human emotions. Perhaps, similar to *Holly*, we are compelled to face these matters head-on, unable to ignore the call.

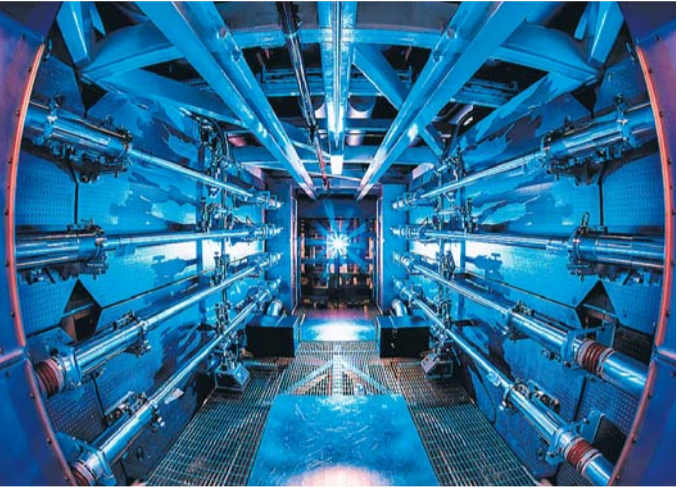
The book will go back into my home library as one of my all-time favourites, and perhaps, the part I will remember for the longest time is when one of the characters quotes Spanish poet, *Juan Ramon Jimenez*, "If you give your ruled paper, write the other way." I was first introduced to this piece of advice on audacity by *Alice Sebold* in *The Lovely Bones*. But while this 'junior high yearbook quote' works as a sort of an uneasy foreshadowing for what is coming for the book's ill-fated teen protagonist, in *Holly*, it feels more like an insight into King's guiding principle in terms of 'writing.'

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#BREAKTHROUGH

Unlimited Clean Energy

New nuclear fusion record brings us one step closer to unlimited clean energy



We have reached one step closer to realising the goal of 'limitless clean energy' with the same kinds of reactions that power the sun and the stars. Researchers have set a new 'nuclear fusion reaction record' and produced more power using technology than ever before.

The Joint European Torus, (JET), a large and powerful fusion machine at the Culham Centre for Fusion Energy near Oxford, England, to reliably generate fusion energy. JET's final deuterium-tritium experiments generated high fusion power for five seconds while creating the groundbreaking record of 69 megajoules, using just 0.2 milligrams of fuel. That is equivalent to the amount of energy produced by around 15 kilograms of TNT.

'Nuclear fusion' refers to the reactions where two light atoms' nuclei combine to form a heavier one, along with a massive release of energy. But this is not an easy process. Atomic nuclei have a strong repulsion against each other. That is why the sun gets these nuclei to collide with each other at extremely high temperatures of around ten million degrees Celsius. That is what is required to overcome that 'mutual repulsion.'

But once two nuclei come very close to each other, the attractive nuclear force between them will become stronger than the electrical repulsion, letting them fuse. This will only happen if the nuclei are confined to a small space to increase the chances

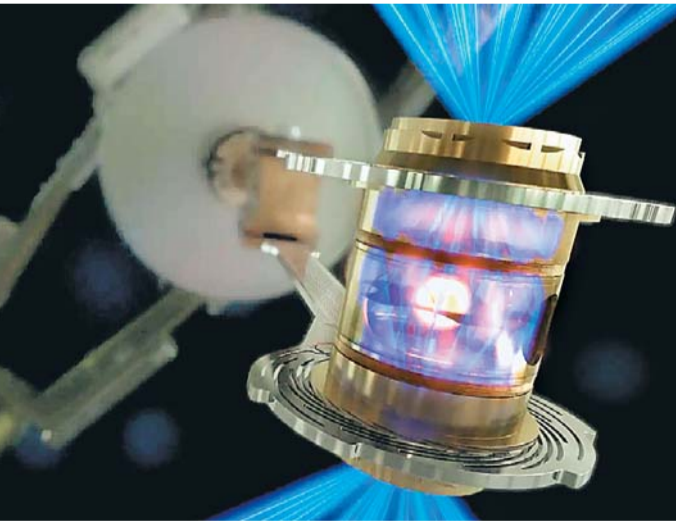
of collision. This is achieved by the sun, with the extreme pressure caused by its incredibly strong gravity.

JET is, sometimes, called a *tokamak*, a machine that uses powerful magnetic fields to confine plasma into the shape of a donut. Most researchers, looking to create commercial fusion energy, use two hydrogen variants, deuterium and tritium. The fusion of deuterium and tritium produces a helium atom and a massive amount of energy.

JET's final fusion experiment is a fitting swansong, after all the groundbreaking work that has gone into the project, since 1983. Researches are closer to fusion energy than ever before, thanks to the international team of scientists and engineers in Oxfordshire.

Fusion energy could be the lynchpin in our fight against climate change. But there is a problem. By the time it becomes a viable source of energy, it might be too late to use it as 'the main tool' against climate change, according to *Aneega Khan*, a research fellow in fusion energy at the University of Manchester.

"This is a great scientific result, but we are still a way off commercial fusion. Building a fusion power plant also has many engineering and materials challenges. However, investment in fusion is growing and we are making real progress. We need to be training up a huge number of people with the skills to work in the field and I hope technology will be used in the latter half of the century," says Khan.



By Jerry Scott & Jim Borgman

ZITS

