

#IT'S TRUE

Khul Ja Sim Sim!

Tiny Bacteria That Turns Metal to Gold: A Breakthrough in Green Mining



In a discovery that could revolutionize the way we extract precious metals, scientists have identified a unique soil-dwelling bacterium capable of converting toxic metals into real gold. This natural process may pave the way for more sustainable and environmentally friendly mining methods, eliminating the need for harmful chemicals commonly used in traditional gold extraction.

Nature's Goldsmith: The Power of Bacteria

Researchers have long been intrigued by how certain microorganisms survive in extreme environments, especially in soils contaminated with heavy metals. One such bacterium, Cupriavidus metallidurans, has shown an extraordinary ability: it can transform toxic gold compounds into harmless, solid gold particles.

Living in metal-rich soils, this bacterium detoxifies its environment by chemically converting soluble metal ions into solid forms. In the case of gold, the organism absorbs the toxic gold compounds and reduces them into tiny gold nuggets through a natural enzymatic process.

A Greener Way to Mine

Traditional gold mining involves harsh chemicals such as cyanide and mercury, which are highly damaging to ecosystems and pose severe health risks to miners and surrounding communities. The newly discovered microbial process offers a cleaner, safer alternative. Since the bacterium performs the transformation biologically, there's no need for these harmful reagents.

This microbial method could significantly reduce the environmental footprint of gold mining and metal recycling operations. By utilizing naturally occurring organisms, scientists envision a future where mining becomes not only more sustainable but also more cost-effective in the long run.

Scientific Significance and Broader Applications

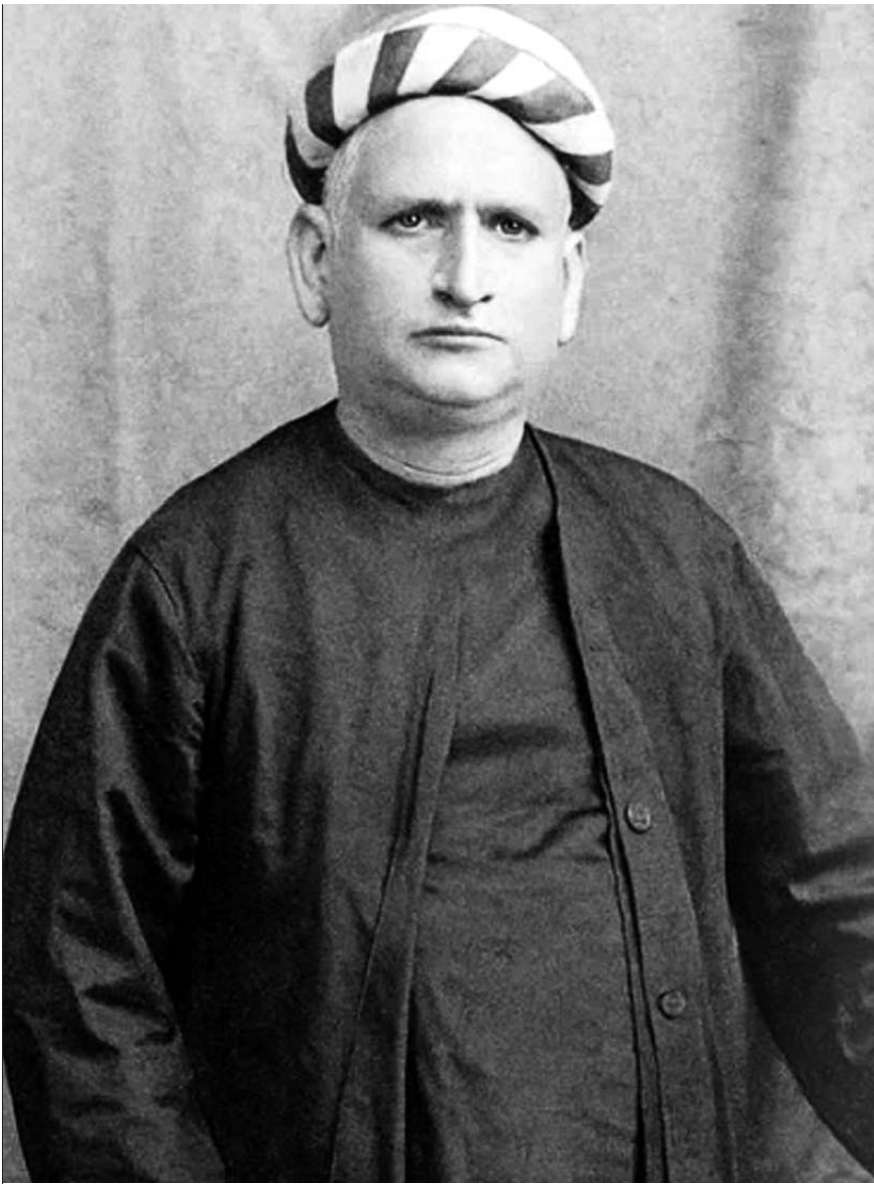
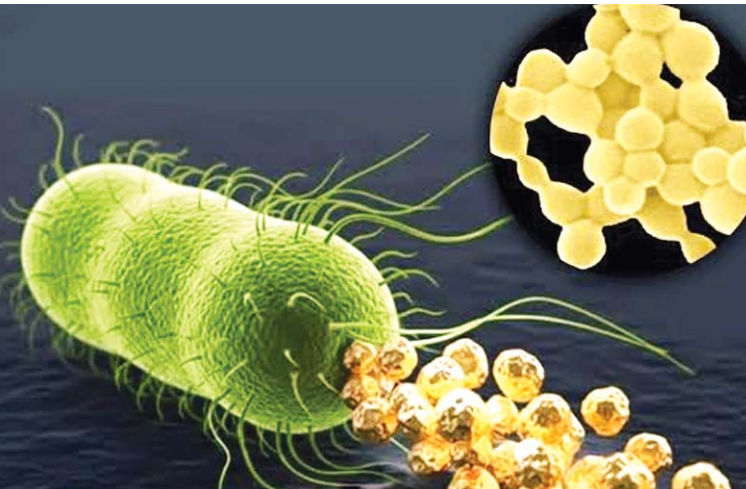
The discovery extends beyond just gold. Other bacteria, like Deiftia acidovorans, also possess the ability to transform toxic metal ions into usable forms. This opens doors to broader applications, including the recovery of valuable metals from electronic waste and industrial sludge.

These microbial processes, often referred to as 'bio-mining' or 'bioleaching,' are already being explored for extracting copper, silver, and rare earth elements. With further research, they could become a mainstream solution in the global effort to reduce industrial pollution and promote circular economy practices.

Challenges Ahead

While the science is promising, experts caution that commercial-scale application is still in its infancy. Producing gold using bacteria is currently inefficient compared to traditional methods, and scaling the process remains a technical hurdle. However, as researchers continue to optimize microbial behaviour and explore genetic enhancements, practical applications may not be far off.

This remarkable discovery underscores nature's untapped potential in solving some of our biggest environmental challenges. The ability of a tiny bacterium to convert toxic metals into gold could mark a turning point for the mining industry, ushering in a new era of cleaner, greener metal extraction. As scientists continue to explore this phenomenon, the fusion of microbiology and metallurgy may well redefine how we view both waste and wealth.



Anjan Roy A renowned veteran journalist, having worked with Business Standard and the Telegraph.

he readers of Arbit have requested that this piece of our revered contributor to the regular Rashtradoot be made available. We are bound by their love of us, and are reproducing the original piece for their benefit.

Vande Mataram has assumed the proportions of a national point of conversation. Maybe, it is time to look into the times when the great writer, Bankim Chandra Chattopadhyay, was writing his literary outputs.

Bankim Chandra was a deputy magistrate under the government of India and he was uniquely positioned to interact with Englishmen as well as the important leaders of the dominant Hindu comment.

Bankim Chandra was one day returning home from his office. He was cutting across an open field to his home. His palanquin bearers were carrying Bankim Chandra across the field where some Englishmen were used to playing cricket.

Seeing someone was cutting across their cricket field, some Englishmen were so enraged and assaulted first Bankim's 'palki' bearers and then him.' At this turn, Bankim Chandra was offended and

apparently lodged a complaint against the cantonment officials.

In due course, the case was put up to the higher judiciary, where the verdict was given in favour of Bankim, and the truant Englishmen had to crave for his forgiveness in open court.

Thereupon, Bankim Chandra withdrew his complaint against the offending Englishmen. However, the infamy of having to seek a waiver from an Indian 'native' had touched the offender's ego and heart and they decided to take revenge. This time, the offenders, who were part of the local cantonment, had planned to eliminate Bankim.

The secret was soon out, and the local Raja, 'a major landlord,' heard of plans afoot, he warned Bankim of the conspiracy against him. The Raja took him to his own rambling property, a house in a secluded area, which was famous for the congregation of 'tantrics' in Bengal, Bihar and Odisha.

Bankim stayed there and would sometimes explore the forests around the zamindari estate. He discovered a string of temples built considerably before this times, which were in various state of ruin.



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The zamindar bari was on the verge of a vast jungle of thorn bushes



Cutting it up! Don't sing, if you do not want to! But for country's sake, and for the sake of great literature, don't destroy it!

In his mind, Bankim saw the image of Jagatdhari in splendid glory of a queen of a goddess. In the next image, he saw the present state of the country where Kali was standing almost with nothing on, but skulls over a dead Shiva. In the last image, he witnessed the goddess back in splendour in the form of Durga, astride the great lion, and endowed with every weapon and in a position to slay a mighty demon. It was the same image of the goddess as he remembered seeing in his ancestral home during the Durga Puja. It was the realisation of the state of the country with the varied images of the Goddess, which as if depicted the plight of Mother Goddess of Aryavarta, or Bharat.

#RASHTRA GEET



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and great trees which had created an atmosphere of impenetrable fortress. Inside this jungle were the temples strewn in between, some into crevasses and some completely under the grounds. There, in his tours of the isolated, distant, dark land, Bankim had a strange realisation of a series of events from his life and contemporary scenes.

In one of the temples, he discovered an image of Goddess Kali, which was austere and formidable. In another, he found the image of Durga with Kali, but accompanied by Saraswati, Laxmi, Ganesha and with Kartika.

Again, while moving around that deep jungle, Bankim Chandra discovered another temple which had the idol of Durga and it appeared to have been worshipped not long back.

It was there in the cavernous jungle with many temples of goddess Kali, Durga and Jagatdhatri that Bankim's mind got swept into the various incarnations of the goddess and the terrible state of the country.

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Bankim Chandra, who was at the time, editing his great nineteenth century periodical, 'Bangadarshan,' had written the poem perhaps for publication in his

offended should stay away from seeking to make sense of it. And he was reported to have observed to some in his most intimate circles, that the significance of the poem would be apparent only after his death. For years after he was gone, the poem would catch the imagination of the entire country.

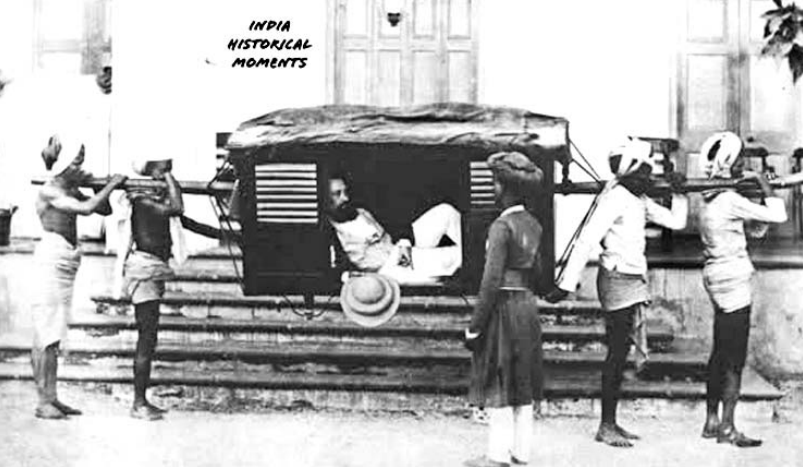
As a matter of fact, several years after the great writer's death, in 1896, the poem was sung by Rabindranath Tagore in one of the first sessions of the Congress in Calcutta. Thereafter, his niece had also sung the song at another session.

According to some versions, the tune was set by a great Hindustani classical musician of the times, Yadu Bhatta, and it was sung by the revolutionaries seeking to free the country from the shackles of imperial rule. Generations after generations, Bengal revolutionaries had faced the bullets from the British Police singing 'Vande Mataram.'

For good or evil, the song is certainly incomplete if only the first two stanzas are sung. These would be without context and relevance.

The last words on the song should be if you wish to sing it, sing. If you don't want, don't sing it. But for heaven's sake, don't cut it up in pieces. Because then, you are annihilating the spirit of the song, its time, and, above all, its author. Bankimchandra was a spirited man, who stood upto the British when they were at their strongest. He would certainly have disapproved of splintering his creation and destroying it.

authorities banned the singing or uttering Vande Mataram.



periodical. However, he kept it from publication at the last minute.

The poem was later published and immediately gave rise to controversy. Many contemporaries had questioned, why Bankim had written the poem in such heavily Sanskritised language instead of writing it in plain Bengali. Many of Bengal's elites had also criticised Bankim over this poem as not being pleasant sounding.

However, Bankim stood fast. He had never conceded to the criticisms. In fact, if anything, Bankim bristled with his defence and refused to make changes, excepting some which were really valid points on the language.

Instead, Bankim always maintained that anyone finding fault with the poem, not to liking, may choose not to read it. Anyone feeling

#CULTURE

Rice For Your Hair!

Secret for Long, Luxurious Hair: The Power of Rice Water

Long, healthy, and shiny hair is a timeless symbol of beauty and vitality. Across cultures and centuries, people have sought natural ways to grow and maintain gorgeous locks. While countless hair products flood the market today, one ancient remedy continues to stand out, rice water. This humble ingredient has been a well-kept beauty secret in many Asian cultures, particularly in Japan, China, and Southeast Asia.

Packed with vitamins, minerals, and amino acids, rice water is now being rediscovered as a powerful, natural elixir for hair growth and strength.

The Ancient Roots of Rice Water for Hair

Rice water's use as a beauty treatment dates back centuries. In ancient Japan, court women known for their floor-length hair were said to bathe their hair in yu-sui-ru, the water left over from washing rice. Similarly, the Yao women of Huangluo Village in China, often called the 'long-hair village,' attribute their famously long, dark, and healthy hair to regular rinsing with fermented rice water.

These time-tested traditions hint at rice water's impressive benefits, not just folklore, but results supported by generations of practice.

What Makes Rice Water So Effective?

Rice water contains a rich mix of nutrients essential for hair health.

- **Amino acids:** The building blocks of protein, they help repair damaged hair and support new growth.
 - **Vitamins B and E:** Boost scalp circulation, promote stronger strands, and prevent breakage.
 - **Inositol:** A carbohydrate found in rice water that helps improve elasticity and reduces friction, leaving hair smoother and shinier.
 - **Antioxidants:** Help combat free radicals that can cause hair aging and thinning.
- When applied to the hair and scalp, these nutrients nourish follicles, reduce hair fall, strengthen the hair shaft, and add a natural shine, essential for growing long, luxurious hair.



How to Use Rice Water for Hair Growth

Using rice water at home is simple and affordable. Here's a basic method.

1. Rinse the Rice

Take ½ cup of uncooked white rice and rinse it thoroughly to remove any dirt or impurities.

2. Soak

Add the rinsed rice to 2-3 cups of water and let it soak for about 30 minutes. Stir occasionally.

3. Ferment (Optional)

For stronger effects, let the rice water sit at room temperature for 12-24 hours to ferment. Fermentation lowers the pH, making it closer to the natural pH of your scalp.

4. Strain

Remove the rice and store the water in a clean container or spray bottle.

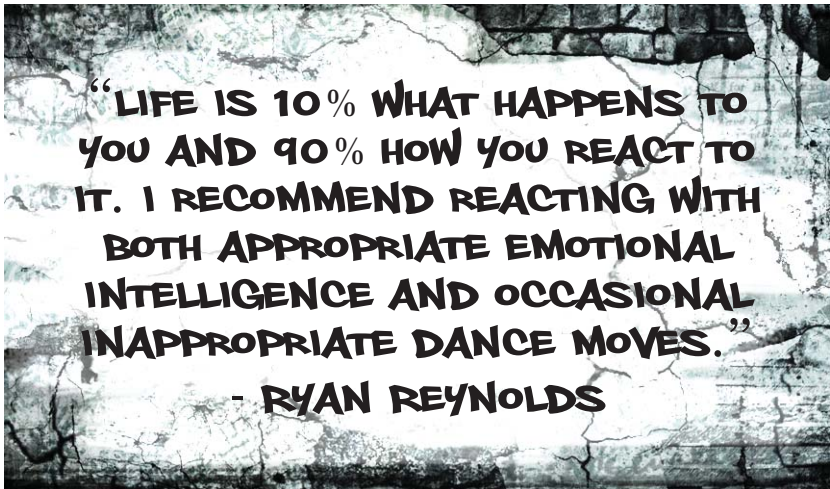
5. Apply

After shampooing, pour or spray the rice water onto your hair and scalp. Leave it on for 10-20 minutes, then rinse thoroughly with clean water. Use 1-2 times a week for best results.

Achieving long, luxurious hair doesn't always require expensive treatments or synthetic products. Sometimes, the best secrets are found in nature, and in tradition. Rice water, rich in nutrients and deeply rooted in centuries of beauty practices, offers a simple yet powerful way to strengthen your hair, boost growth, and reveal a healthy shine. Try incorporating rice water into your routine, and with patience and care, you may just unlock your hair's full potential, naturally.



THE WALL

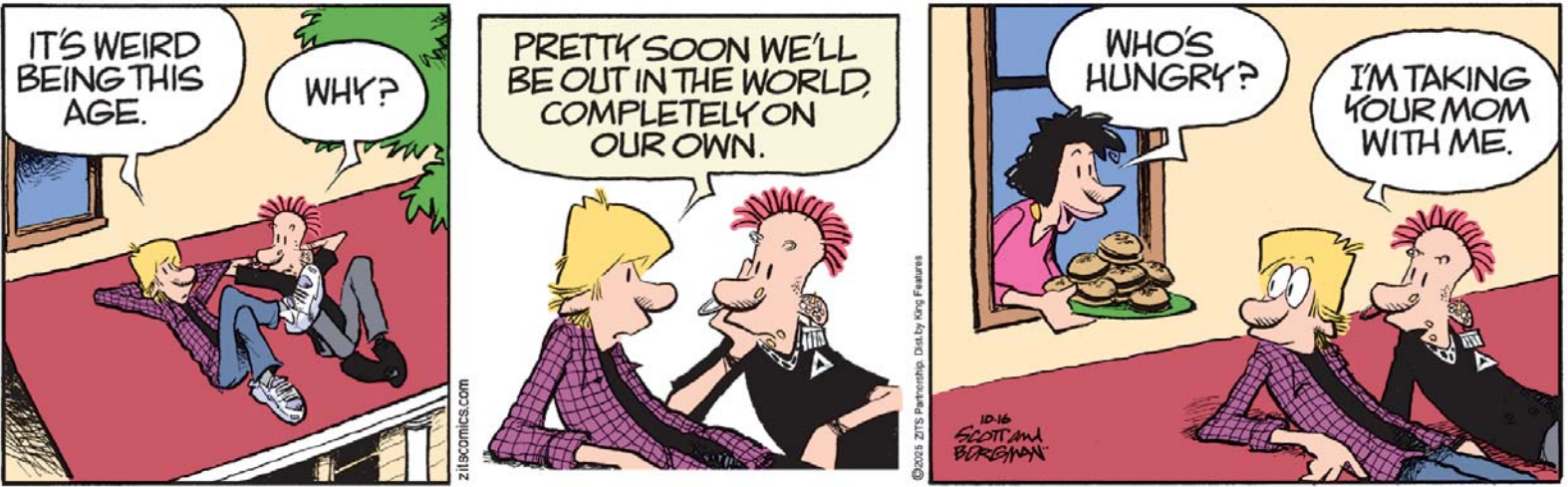


BABY BLUES



By Rick Kirkman & Jerry Scott

ZITS



By Jerry Scott & Jim Borgman