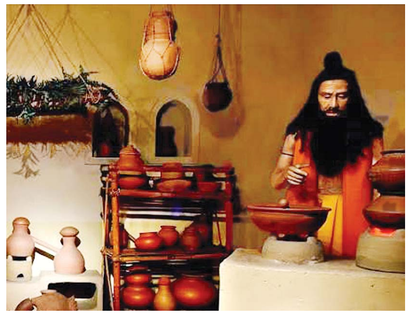
ARBiT
it happens here...

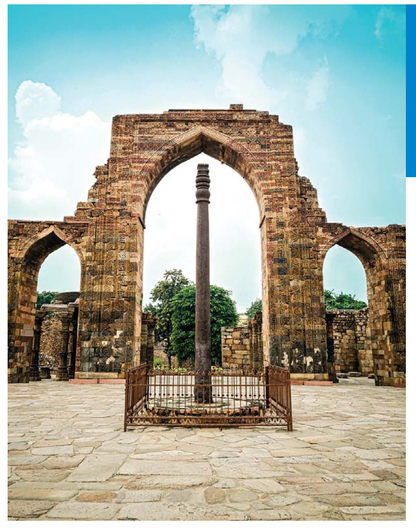
A Peel of Celebration

Celebrated on August 27, National Banana Lovers Day is dedicated to one of the world's most popular and nutritious fruits. Bananas are not only a delicious snack but also packed with essential nutrients like potassium, fiber, and vitamin B6. This day celebrates banana enthusiasts and the many ways this versatile fruit can be enjoyed, whether blended into smoothies, baked into bread, or eaten straight from the peel. It's also a great time to appreciate the global significance of banana cultivation and the farmers behind it. On this fruity occasion, banana lovers indulge and go bananas for their favourite treat!

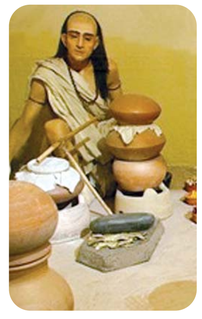
राष्ट्रदूत
THURSDAY
27 August 2026
A-B

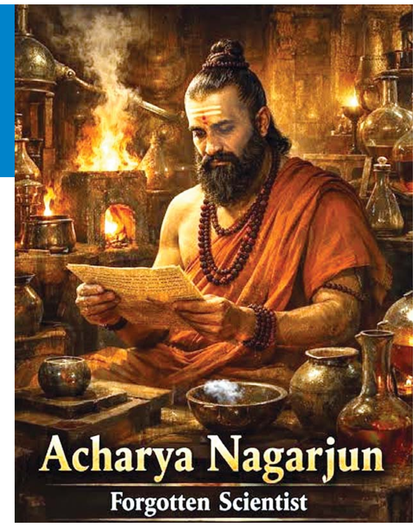
The World's First Chemistry Lab





Traditional accounts hold that Nagarjuna practiced ayurvedic alchemy (rasayana). Kumarajiva's biography, for example, describes Nagarjuna making an elixir of invisibility, and Bus-ton, Taranatha and Xuanzang all recount that he could turn rocks into gold. The most recent comprehensive discussion of the complicated text-historical issues connected with the name Nagarjuna is given in the *History of Indian Medical Literature.*





● Kshema Jatuhkarna

Nagarjuna, a legendary figure in ancient Indian science and alchemy, is often credited with groundbreaking contributions in various fields, especially chemistry. His work in the area of alchemy and metallurgy laid the foundation for some of the world's earliest advancements in these fields. One of his most notable achievements is the establishment of what is believed to be the world's first chemistry laboratory in the village of Nagalwada, Maharashtra, long before Western science had any similar institutions. Nagarjuna's experiments in alchemy and materia alchemy (rasayana). Kumarajiva's biography, for example, describes Nagarjuna making an elixir of invisibility, and Bus-ton, Taranatha and Xuanzang all recount that he could turn rocks into gold. The most recent comprehensive discussion of the complicated text-historical issues connected with the name Nagarjuna is given in the *History of Indian Medical Literature.*

Substance for imitation jewellery

At a time when the Western scientists conducted subsequent experiments in Alchemy and failed, in India, alchemy saw a prominence in similar experiments by Nagarjuna. He discovered through his experiments in his laboratory the alchemy of transmuting base metals into gold. It was not the actual gold, but a gold-like substance or element that looked like gold and shone like gold. This gold-shine mechanism technology is used today by the jewellery industry for making imitation jewellery. The gold shine in imitation jewellery we wear today is a gift by Nagarjuna.

Work on Mercury

He did his experiments especially on mercury. He distinguished between the metals and the sub-metals and also between solvents and soluble. He stated that Mercury could dissolve all metals. He also invented the processes of "Distillation" and "Calcinations." He succeeded in discovering and learning the properties of Black Sulphide of antimony. Makardhwaj or Chandrodaya is a Mercury compound which can work as a magic power with patients who are close to death.

He was the first person on the planet to use Mercury as medicine. He found five types of mercury: red and grey were good; yellow, white or multicoloured had so many bad qualities and this should be used as a medicine after several treatments.

Some verses from Nagarjuna's book and their meanings:

Verse:

यथा कुंजरप्रस्तारे सौवर्च
विद्युतो यथो।
तथा रसायनादौ तु सिद्धिः
कार्या यथाविधि?

Meaning: "Just as electricity is produced from a spot of water on an elephant's forehead, or as light is produced from a crystal, similarly, success in chemical processes must be achieved methodically."

This verse uses similes (metaphors) to convey the idea that success in chemical processes is achieved through careful and proper procedures, similar to the manifestation of electricity or light.

Verse:

सर्वं द्रव्यं यथा दोषैः
संस्कार्यं रसरूपता।
तथा तत्त्वे स्वकर्माणि
संस्कुर्वीतादौ पुरुषः?

Meaning: "Just as all substances are purified by removing impurities, similarly, one must purify oneself to purify one's actions."

This verse draws an equation between the process of purification of substances in chemistry and the improvement of their functions in life, highlighting the importance of purification of the soul and taking into account the greatness of inner purification in the prejudice of spiritual and alchemical goals.

Because of his profound scholarliness and versatile knowledge, he was appointed as Chancellor of the famous University of Nalanda.

The First Chemistry Lab

Nagarjuna's chemistry laboratory, located in Nagalwada, is thought to be the precursor to modern-day chemical laboratories. The complex work conducted here included various chemical processes, including refining metals and developing compounds that were not known to the ancient world. Scholars believe that Nagarjuna's laboratory was a center of experimentation with various elements, compounds, and chemical reactions, giving rise to what we now recognize as the early stages of modern chemistry. His laboratory not only produced advanced chemical knowledge but also practical applications that impacted daily life.

Polish on Gold and Silver: A Refining Revolution

One of Nagarjuna's remarkable achievements was the discovery of the process of polishing gold and silver. In ancient India, these precious metals were not just used for jewellery and currency but were also an integral part of religious and cultural practices. Nagarjuna's method of refining and polishing gold and silver created a brilliant finish, which is still admired for its clarity and sheen. This process, which involved chemical reactions to clean and purify the metals, laid the foundation for modern metal-working and was essential for the production of high-quality artifacts.

Designing, Finishing, and Adding Color

Nagarjuna was also known for developing methods for finishing and designing metals in ways that were revolutionary for his time. His understanding of metal properties allowed him to design intricate structures with impressive durability. But beyond just shaping metals, Nagarjuna's work included adding colors to the surface of metals. His techniques, likely involving a combination of alloying and coating processes, gave rise to the practice of applying vibrant, durable colors to gold and silver. These early methods would eventually lead to advancements in metal enameling and decorative techniques that are widely used today.

Antiseptic Medicines and Medical Innovation

Another area where Nagarjuna made significant contributions was in the field of medicine. He is often credited with formulating early antiseptic medicines, long before the term "antiseptic" was even coined in modern science. His experiments with medicinal plants and compounds led to the creation of substances that could prevent infections, aiding in the healing of wounds and the treatment of illnesses. These early antiseptic formulas showcased Nagarjuna's deep understanding of chemistry, biology, and the natural world.

Metal Science Methods for Mehrauli Pillar

Perhaps, one of Nagarjun's most enduring legacies is his work on the Mehrauli Pillar, where his methods of metal science were applied in the construction and preservation of this historic structure. The pillar in Delhi is an example of ancient Indian architectural genius, and Nagarjuna's expertise in metallurgy contributed significantly to its durability. His ability to mix and forge metals with precision helped protect the pillar from corrosion and wear over centuries, a technique that would influence later generations of engineers and architects.

The Beginning of Nanoparticles: Early Nanotechnology

In addition to his pioneering work in alchemy and metallurgy, Nagarjuna is often regarded as one of the early pioneers of what we now call nanotechnology. The manipulation of metals and materials at a microscopic level can be seen in Nagarjuna's work with nanoparticles. While the term "nanoparticle" did not exist in his time, Nagarjuna's ability to manipulate materials at a minute scale led to the creation of substances with unique properties. This early form of nanotechnology, particularly in the realm of metal coatings, colored surfaces, and the refining of materials, laid the groundwork for the eventual discovery of nanoparticles in modern science.

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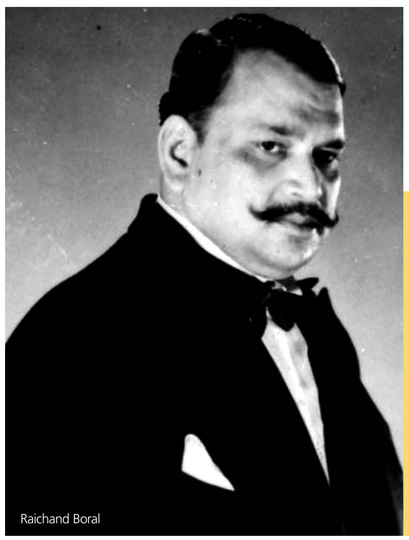
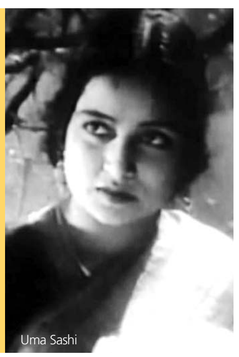
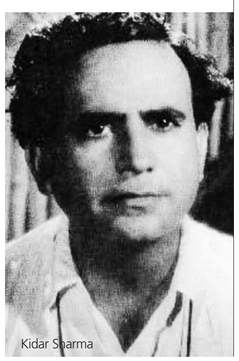
#NAGARJUNA'S LEGACY



The Song That Changed Indian Cinema Forever

Later, Raichand Boral asked the tabla player why he had unexpectedly increased the tempo in the final section. The answer became part of film folklore. A fish had entered the musician's pyjama and was tickling him. The involuntary panic caused him to speed up the rhythm.






DHOOP CHHAON

● Bulbul Joshi

Indian cinema today is unimaginable without playback singing. The voices of Lata Mangeshkar, Asha Bhosle, Mohammed Rafi, Kishore Kumar, and countless others became inseparable from the emotional memory of generations. Yet, there was a time when playback singing did not exist at all.

Actors had to sing live during shooting.

No retakes with pre-recorded tracks. No studio polishing. No separate singers hidden behind glamorous stars. The actor, musicians, microphones, and camera all had to work together simultaneously in a single take. It was chaotic, technically limiting, and often unintentionally comic. The revolutionary idea that changed everything emerged in the 1930s at the legendary New Theatres studio in Calcutta, and at the center of that revolution stood Raichand Boral, remembered today as one of the fathers of Indian film music.

A memorable account of this transition appears in Kidar Sharma's autobiography, *The One and Lonely Kidar Sharma*. Through humor and vivid detail, Sharma captured the absurd difficulties of filmmaking before playback technology transformed cinema.

The Day Musicians Stood Inside a Pond

One incident from the book has become legendary. An early singer-actress, Uma Sashi, was filming a song sequence outdoors. The scene required her to stand near a tree and sing naturally on camera. Since songs were recorded live during shooting, the accompanying musicians had to remain nearby, but also hidden from the camera frame.

The solution was ingenious and ridiculous at the same time. The musicians hid themselves inside a pond. The flute player managed somehow, keeping his instrument above water. But the tabla and harmonium players faced a greater challenge. They reportedly tied their instruments around their waists and stood half-submerged in water so that they would remain invisible to the camera.

Shooting began.

Miraculously, everything went smoothly for most of the song. Uma Sashi continued singing while the musicians played from the pond like invisible aquatic accompanists. Then, near the end, the rhythm suddenly accelerated.

Still, the take somehow worked, and the director declared it acceptable.

Later, Raichand Boral asked the tabla player why he had unexpectedly increased the tempo in the final section. The answer became part of film folklore.

A fish had entered the musician's pyjama and was tickling him.

The involuntary panic caused him to speed up the rhythm.

The anecdote is hilarious, but it also reveals the enormous technical difficulties of early filmmaking. Every outdoor song sequence demanded impossible coordination. Cameras were bulky and noisy. Microphones were primitive. Musicians had to hide behind trees, walls, furniture, or even ponds.

Cinema desperately needed a better method.

The Birth of Playback Singing

The experience pushed Raichand Boral to think differently.

According to Kidar Sharma's account, Boral discussed the problem with filmmaker Nitin Bose and Bose's brother, Mukul Bose, who worked as a recordist at New Theatres. What if songs could be recorded separately first?

What if actors simply lip-synced during filming?

The idea sounds obvious today, but in the early 1930s, it was revolutionary. It would eliminate on-set recording chaos, improve sound quality, and fundamentally change casting itself.

For the first time, cinema could separate the singing voice from the screen performer.

That meant:

- talented singers, who were not actors, could still become stars,
- actors, who could not sing well, could still perform musical roles,
- songs could achieve far greater musical sophistication.

The implications were enormous.

Then came the breakthrough.

#PLAYBACK


The New Theaters

"Main Khush Hona Chahoon" and Dhoop Chhaon

In 1935, with the film *Dhoop Chhaon*, Raichand Boral introduced playback singing to Indian cinema.

The song "Main Khush Hona Chahoon" is widely regarded as the first playback song in Indian film history. Instead of recording the performers live during filming, the song was pre-recorded and later synchronized with actors on screen.

It was a technological and artistic revolution. The first playback singers associated with this experiment included:

- Parul Ghosh
- Harimati Dua
- Suprabha Sarkar
- Krishna Chandra Dey

Few at the time could have imagined how deeply this innovation would shape Indian culture.

The Invention That Created the Golden Age

Without playback singing, the history of Indian cinema would have been entirely different.

The system, pioneered by Raichand Boral, opened the door for generations of legendary singers whose voices became larger than the films themselves.

Playback singing transformed film music into an independent art form. Singers became national icons. Music directors gained creative freedom. Recording studios evolved into laboratories of emotion and experimentation.

And all of it traces back to a simple realization born from technical frustration: Perhaps, musicians should no longer stand hidden inside ponds while actors sang before the camera.

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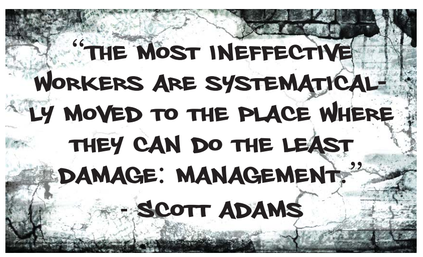
THE WALL



BABY BLUES

By Rick Kirkman & Jerry Scott

ZITS

By Jerry Scott & Jim Borgman