ARBiT it happens here...

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WEDNESDAY
18 June 2025
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Sustainable Gastronomy Day is here!

Imagine a day dedicated to celebrating the art and science of food, where every bite is a step towards a healthier planet. That's what Sustainable Gastronomy Day is all about. Celebrated each year on June 18, this special day illuminates how we produce, consume, and think about food. It's a moment to remember that delicious food can also respect our planet's resources and support local communities. The day encourages us to choose foods that are tasty and good for the environment. It's about minimizing waste, valuing local produce, and understanding the cultural importance of food. This initiative supports goals like improving food security, promoting agricultural development, and preserving biodiversity.

#FOOD

McDonald's French Fries are Veg?

Why McDonald's fries are meat-free in India but contain beef in the U.S.

● Doris Lin

Most animal-rights activists follow a plant-based diet for ethical reasons and studiously avoid places where meat makes up the bulk of the menu. Still, vegetarians or vegans may occasionally find themselves inclined to sneak into McDonald's for a serving of the famous Golden Arches French fries. If they're serious about living meat-free, however, they should stop. Despite numerous protests, and lawsuits, McDonald's fries aren't and never have been, vegan or vegetarian. "But how can that be?" you may ask. "French fries are made from potatoes and fried in oil, so where's the harm?" (Surprise: there's beef in the oil.) Learn why McDonald's makes beef-free fries in India but hasn't changed its recipe in the United States.

McDonald's Fries in India vs. the U.S.

In India, cows are sacred and not meant for human consumption. Fortunately, in the country, vegetarians can consume all the McDonald's French fries their hearts desire because the menu item is made of strictly plant-based ingredients. In fact, in India, McDonald's locations don't serve pork or beef products at all. But, French fries served at American McDonald's locations aren't vegetarian. Why not, you might ask?

McDonald's cooked its fries in animal fat (lard) for decades; the fat supposedly gave the fries their famous flavour. Eventually, the chain switched from lard to vegetable oil, but customers complained that the fries weren't as tasty. The company solved this problem by adding natural beef flavour to the spuds during the production cycle.

What's Your Beef? A Class-Action Lawsuit

In 2001, McDonald's was hit with a class-action lawsuit, led by a group of Hindu customers who felt they were being duped into unwittingly consuming animal products, which is strictly against their religion. Other vegetarians and vegans joined the fight, pointing out that the company was disseminating misleading information.

Customers were told that the French fries were fried in vegetable oil, the inference being that the fries were no longer cooked in lard and were therefore veg-friendly. Admitting that the fries were coated in beef flavoring, McDonald's settled for $10 million, with $6 million going to vegetarian organizations. But the company didn't change its recipe. The McDonald's website still lists the beef ingredient for all to see.

As a company spokesperson explained: "With regard to our French fries, any customer in the U.S. who contacts McDonald's USA to ask if they contain beef flavoring is told, 'Yes.'" The same McDonald's representative expanded on the explanation, "We have no plans to change the way we prepare our French fries in the U.S. However, it is important to know that our French fries are prepared differently in other countries."

How the Beef Gets in the Fries

In the U.S., McDonald's French fry suppliers add a small amount of beef flavour to the oil in the par-frying process at the potato processing plant before shipping the fries to individual outlets. Once at the restaurant, the spuds are cooked in vegetable oil. For vegans and vegetarians, the extra beef flavouring step is a deal-breaker.

How difficult would it be to omit the meat? Probably, not that hard at all. However, the impact on the bottom line could potentially be enormous. In India, where the majority of customers are vegetarian or vegan, not accommodating meat-free food choices doesn't make sense from an economic standpoint. In the United States, however, the opposite is true. If McDonald's started leaving out the signature ingredient that's long given its fries their famous flavour, you might ask, 'Do you want fries with that?' and the answer could very well be, 'No!'

The Royal Ability To Bring Fruit Barf And Khus

PART:2

Ain-i Akbari recounts intricate details about the use of saltpeter in cooling drinks. Saltpeter (potassium nitrate), a naturally occurring sodium deposit, was a plentiful material in South Asia and also a vital component of gunpowder. South Asia became the primary source of saltpeter for Britain by the seventeenth century. In addition to its use as the oxidizing agent in munitions, when saltpeter dissolves, it creates an endothermic reaction that absorbs the heat in water. The Ain-i Akbari describes how saltpeter could be collected, strained, and purified to form a powder that was then dissolved in water. A nineteenth-century painting depicts a servant cooling water, a figure known to the British as an 'aubdar' (from the word 'ab-dar').

● Sylvia Houghteling

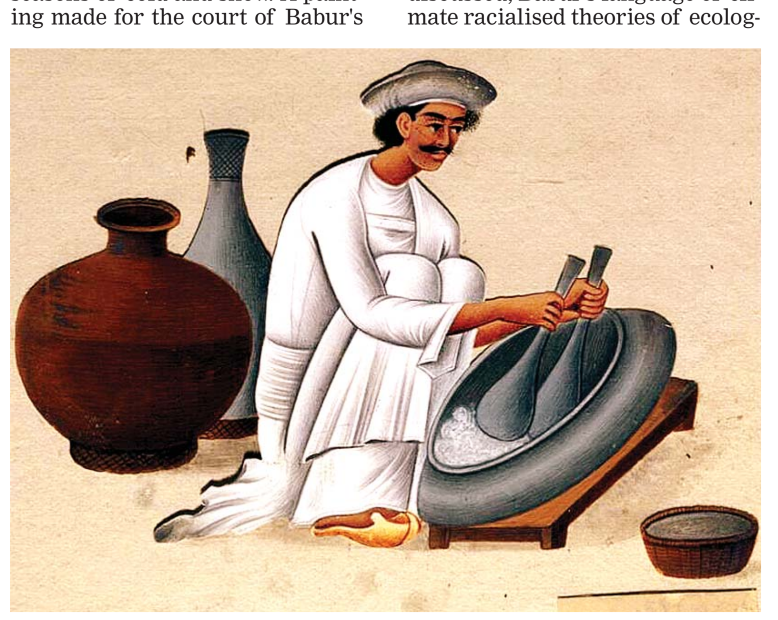
#BEYOND ICE

Exterior of yakhchal, Qal'ah-i-Jalali Citadel, and the interior.

In the interlinked cultural histories of West, Central, and South Asia, cool water and ice had long provided one form of relief in the hot season. Naturally occurring ice could be procured in the mountains and carried to warmer climates in the plains, where it was preserved through strategies of packing and through specially designed chambers that kept the ice from melting. Scholars have hypothesized that by 400 BCE in Iran, methods for storing ice had emerged, the most enduring of which was the *yakhchal* (literally 'ice-pit'), a conical structure that, through its dense and thick walls, preserved cold water and even ice and snow throughout the dry, hot months in the desert. In both Iran and Hindustan, the high-altitude ice was supplemented by thin layers of ice that formed in shallow pools and containers on cool mornings, even if temperatures did not dip below freezing. This fragile ice was harvested, pounded together into thick blocks, and preserved.

The search for respite from the heat appears throughout South Asian literary and textual accounts, but the specific concern with ice is most thoroughly documented in the accounts of the Mughal Empire. It is part of the lore of the foundation of the Mughal Empire, a dynasty descended from the Central Asian emperor, Timur (r. 1370-1405), that the first emperor, Babur (r. 1526-30) was dismayed to find such a hot climate when he conquered northern Hindustan in the Battle of Panipat. Babur was raised in the much more temperate regions of Central Asia, and his autobiography, the *Baburnama*, describes seasons of cold and snow. A painting made for the court of Babur's counterpart and contemporary in the Safavid Empire, Shah Tahmasp (r. 1524-75), depicts a scene from the Shahnama, the mythical story of kings, in which Isfandiyar scrambles with his army to erect tents in the snow. The scene is sprinkled with white specks interspersed with chalky lines that convey a dense snow and strong winds pushing against the soldiers' bodies and their blue, green, and brown felted tents.

When Babur and his military crossed from Central Asia into Hindustan, the landscape changed. As he wrote in his autobiography, "I had never seen a hot climate or any of Hindustan before! A new world came into view, different plants, different trees, different animals and birds, different tribes and people, different manners and customs. It was astonishing, truly astonishing." As Supriya Gandhi has recently discussed, Babur's language of climate racialised theories of ecological or climate determinism that cast the people coming from hotter climates closer to the equator as inferior to those from more temperate realms. Babur often disparaged the heat. In the Baburnama, he described the seasons in cities in what is now Afghanistan and Central Asia with their snows, their clear, cold mountain waters, their crisp air, and their temperate weather fruits. In Hindustan, Babur complained of missing the 'grapes, musk-melons or first-rate fruits' as well as the ice and cold water. Yet, even if he was homesick for fruits and ice, Babur found appreciation in the rainy season, writing that 'while it rains and through the rains, the air is remarkably fine, not to be surpassed for healthiness and charm.' In his short reign, Emperor Babur simulated cooler climates through the importation of melons, oranges, and grapes. He constructed four-part gardens irrigated by water wheels. Through plantings and far-sought fruit, he attempted to recreate a temperate climate in Hindustan in his feasts and pleasures.



An Abdar, cooling bottles.

As Babur's grandson, Akbar (r. 1556-1605), expanded his territories and shifted his capital throughout his domains, he also placed a high value on the transport of ice, water, fruits, and scented substances to bring a sense of cool. The founding of the Mughal Empire coincided with the Little Ice Age, a period of temperature extremes that led to climatic cooling in many parts of the world. However, there exists textual, scientific, and visual evidence that in South Asia, the period was experienced as one of extremes that vacillated between heavy flooding and extreme dry droughts. As the sixteenth and seventeenth centuries progressed, certain regions in Mughal Hindustan, such as Gujarat and the Deccan, underwent years of intense dryness and ruined crops, causing famine and suffering, and drawing an even greater contrast with the elite pleasures in the irrigated city of Lahore as well as gardens set along the glacial lakes of Kashmir.

Early in his reign, Emperor Akbar constructed a short-lived capital at the site of Fatehpur Sikri, forty miles from the imperial center of Agra. The palace structures at Fatehpur Sikri included the *Ab-dar Khana* (with *ab* meaning water), a site that housed the beverage department that still stands as a sandstone structure with deep cisterns to cool water. The site was also used to store fruit and to hold the sacred water of the River Ganga (Ganges) that Akbar consumed each day as part of his adoption of local Indic bodily practices. As Neha Vermani has shown, the imperial official, in charge of the Ab-dar Khana, held a high-ranking role in the military and the administration and was a trusted member of the emperor's circle.

The Ab-dar Khana is described in the *Ain-i Akbari* (the 'Institutes of Akbar'), a text that recorded the details of Akbar's imperial state, ranging from the particulars of the household to the administration of taxable land and the composition of the military. The *Ain-i Akbari* was completed in the 1590s, at which point Akbar had relocated his court away from Fatehpur Sikri, whose flaw was that it lacked a ready water source, to the northwestern city of Lahore, a site in closer proximity to colder, mountainous regions. The chapter on the Ab-dar Khana in the Ain-i Akbari is also unusual in reminding the reader of the emperor's present location in Lahore; the text, by court historian Abu'l Fazl, is generally written from an omniscient, mobile point of view. But in this section, the account begins by describing the water of the River Ganga, stating that when the court was located at Agra and Fatehpur Sikri, the water "came from the district of Sarun; but now that his Majesty is in the Panjab, the water is brought from Haridwar."

The Ain-i Akbari also records a shift towards the use of snow and ice when the court moved to Lahore, a commentary on how even among the members of the imperial court, the possibility of using ice was dependent upon one's geographic location. Abu'l Fazl writes that after 1586, "snow and ice have come into use. Ice is brought by land and water, by post carriages or bearers, from the district of Panhán, in the northern mountains," which was located 45 kms (approximately 81 miles) from Lahore. He describes the 'considerable profit' that dealers received, particularly when the ice was brought by water, and the fourteen stages of horses and one elephant, and the many laborers required when ice was brought by land. The prices for ice could range, but Abu'l Fazl reports that sellers sold about two to three sers (approximately four to six pounds) of ice per rupee. Ice was most costly when it had been brought from a great distance, and prices were highest in the rainy season. Abu'l Fazl notes that "all ranks use ice in summer; the nobles use it throughout the whole year."

The same section of the Ain-i Akbari recounts intricate details about the use of saltpeter in cooling drinks. Saltpeter (potassium nitrate), a naturally occurring sodium deposit, was a plentiful material in South Asia and also a vital component of gunpowder. South Asia became the primary source of saltpeter for Britain by the seventeenth century. In addition to its use as the oxidizing agent in munitions, when saltpeter dissolves, it creates an endothermic reaction that absorbs the heat in water. The Ain-i Akbari describes how saltpeter could be collected, strained, and purified to form a powder that was then dissolved in water. A nineteenth-century painting depicts a servant cooling water, a figure known to the British as an 'aubdar' (from the word 'ab-dar'). As the image suggests, sealed metal bottles of water would be placed into a vessel filled with dissolving saltpeter and water, shown here as a white frothy mixture. Abu'l Fazl describes, "A ser of water is poured into a bottle made of pewter or silver or such metal and its mouth is closed. In a pan, two and a half sers of saltpeter are mixed with five sers of water, and the closed bottle is moved round and round within that mixture for the space of half a *ghari* (i.e. 12 minutes). The water within the bottle gets very cold." In the later painted rendering, the crisp lines of the matte gouache colours, the shaded space, and the ab-dar's starched white garments give a sense of a drop of temperature for the scene. The beverages in the vessel, bathed in saltpeter, would cool in less than a quarter hour.

Zinc Cooling Flask.

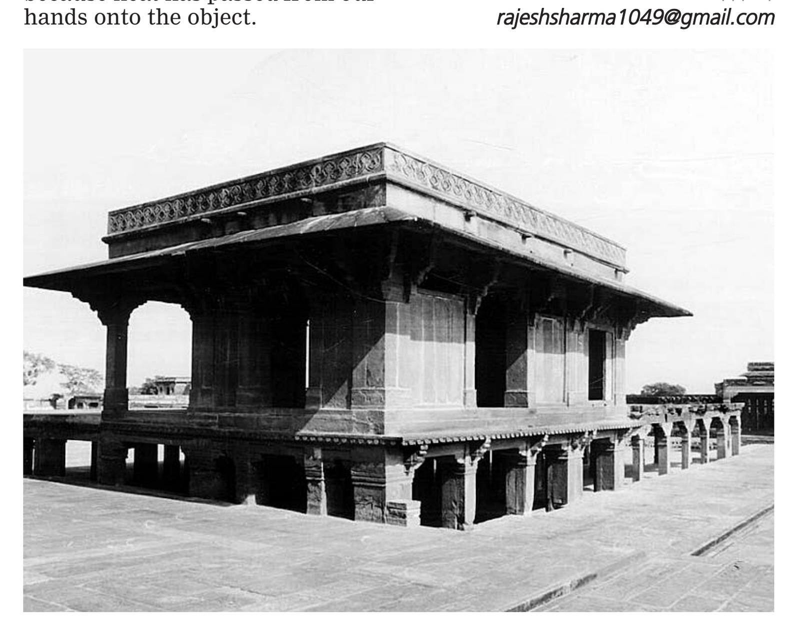
A rare remaining eighteenth-century cold-water flask from South Asia demonstrates the different materials that aided in the cooling of the water bottles. The bottle has a bulbous bottom half, where the water would be held, and a slender neck made of chased silver, by which the ab-dar would hold onto the bottles as they were stirred in the cooling saltpeter bath. The lower half of the flask is made of zinc, a good (though not the best) conductor of thermal energy. More pertinent, perhaps, zinc does not stain and has anti-microbial qualities. Other flasks from this period were made of pure silver, a more effective conductor of heat. A woven red lacquered fabric surrounds the bottle. This was likely both an aesthetic choice and a utilitarian addition, given that cloths soaked in saltpeter were often wrapped around the bottles to cool them more intensely. Although, the lacquered material would not absorb water, cold water would become lodged in the interstices of the loose weave, trapping it next to the metal. The object references water in its reflective surfaces, from the glinting silver to the shining lacquered texture of the cloth. Water also emerges in its patterns, through the layered fish-scales of the bottle's finial and the chevron-like pattern of the silver bottle neck, which resembles the movement of stylized waves. The tactile, highly worked surface of the bottle is a reminder that our thermal sense is often activated through contact with the skin: when we touch a cold bottle, we experience it as having a lower temperature because heat has passed from our hands onto the object.

The use of ice and coolants for water continued among the Mughal elite. In the accounts of Akbar's grandson, Emperor Shah Jahan (r. 1628-58), the ruler is again credited with bringing 'snow and ice' from the mountains to please the court. In a passage within *The Chahar Chaman* (completed by 1647), which was written by Shah Jahan's secretary, Chandar Bhan Brahman, the mention of ice comes just after a much longer description of Shah Jahan's ability to bring 'green and fresh' fruits from great distances in West and Central Asia, and from throughout the Mughal Empire, including 'melons from Balkh and Karis,' the 'black and purple Habshi and Sahibi varieties of grapes,' the 'Samarqandi pears and apples,' in addition to 'watermelons from Kashmir' and 'oranges of every shape and size,' that were nestled in straw or sawdust to keep them secure and dry. The emperor's ability to requisition fragile perishable fruits from great distances paralleled the feat of procuring ice in the summer. After describing the distribution of fresh fruits on gold and silver plates to the nobility, Chandar Bhan writes how in the summer, an 'abundance' of 'ice and snow' (yakh va baraf) is distributed amongst the principal officers, according to their respective ranks. From this telling, Shah Jahan is positioned as the principal recipient of ice that he would then parcel out as a gift to the nobility, much like the gifts of imported fruits.

Due to its cost and exclusive use, ice was perceived as a high luxury. In the *Mirzanama* of approximately 1660, an anonymously written advice book for the aspiring mirza, or gentleman, ice becomes a mark of distinction. The British Museum's text of the Mirzanama includes the advice that having ice, or at least saltpeter for cooling, is an essential requisite for properly enjoying the feeling of the summer drink *paluda* (more commonly spelled as 'faluda'). Aziz Ahmad's summary of the text includes the advice that a mirza 'should eat a few spoonfuls of delicate, fragrant, perfumed paluda (a beverage of water, flour or honey or other components). If it is possible, and if he can afford it, he should not eat the paluda without ice, or at least cooled by saltpeter. If this is not possible, he should not eat paluda or even mention its name; for without ice and without being chilled by saltpeter, it does not chill the teeth.' This admonition against drinking paluda, if it is not cold enough, contains two strands of information. First, it indicates that access to cold or chilled beverages was something that only a select few could afford. But perhaps more interestingly, the author focuses on the ideal bodily experience of drinking this cooling beverage. It suggests that coolness was experienced not just by tasting the drink's refreshing flavours, but also having it 'chill' the inside of the mouth.

To be continued...

rajeshsharma1049@gmail.com



Ab dar Khana, Fatehpur Sikri.

#RINOREA NICCOLIFERA

A Metal-Eating Plant

High nickel tolerance allows Rinorea to survive in nickel-rich soils, which would otherwise be toxic to most plants.

In a remarkable discovery on Luzon Island in the Philippines, scientists have identified a plant species with an extraordinary ability to thrive in metal-rich environments and absorb heavy metals. Rinorea niccolifera, commonly known as a nickel-hyperaccumulator, has the unique ability to store exceptionally high concentrations of nickel in its leaves, up to 18,000 parts per million (ppm), approximately 1,000 times more than most plants can tolerate. This could revolutionize environmental restoration and even reshape mining practices.

Rinorea melanodonta Tabaro.

Phytoremediation: Nature's Solution to Soil Pollution

Phytoremediation is an emerging field that leverages plants to clean up contaminated environments. Plants can naturally absorb harmful substances from the soil through their roots, metabolize them, and either store them in their tissues or transform them into less toxic forms. This process is not only a natural and low-cost alternative to traditional environmental cleanup methods but also an eco-friendly one, as it does not involve harmful chemicals or energy-intensive technologies.

While many plants can accumulate metals to some extent, hyperaccumulators like Rinorea niccolifera are capable of storing concentrations far beyond what other species can endure. In the case of this plant, the high nickel tolerance allows it to survive in nickel-rich soils, which would otherwise be toxic to most plants.

This ability to absorb and sequester heavy metals could be used to remediate contaminated soils, particularly in areas where industrial activities have led to high concentrations of toxic metals like nickel, cadmium, and lead. Mining operations, for example, often result in the release of heavy metals into the surrounding environment, contaminating soil and water.

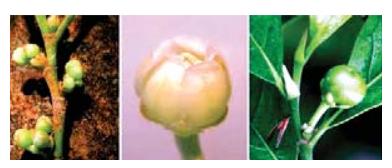
Green Mining: Sustainable Metal Extraction from Plants

In addition to its role in environmental remediation, the discovery of Rinorea niccolifera has exciting implications for a more sustainable form of mining, known as green mining or phytomining. Traditional mining methods, especially those involving extraction of metals like nickel, are resource-intensive and environmentally destructive. These processes often involve large-scale excavation, energy consumption, and the disruption of ecosystems.

Phytomining, on the other hand, involves the use of plants to extract valuable metals from the soil. Plants like Rinorea niccolifera can be grown in metal-rich environments, where they absorb and concentrate metals in their tissues. These plants can then be harvested, and the metals extracted from them in a way that avoids the environmental degradation associated with conventional mining. This approach is not only more sustainable but also has the potential to make metal extraction more energy-efficient and less harmful to ecosystems.

The potential of Rinorea niccolifera for green mining lies in its ability to accumulate such high concentrations of nickel. Nickel is a key metal used in a variety of industries, including electronics, batteries, and steel production. However, conventional mining of nickel is energy-intensive and often causes significant environmental damage. Phytomining, by contrast, offers an eco-friendly and potentially profitable way to extract metals while simultaneously remediating polluted soils. In addition to nickel, other hyperaccumulating plants may be used to extract metals such as copper, zinc, and cadmium, further expanding the possibilities for sustainable mining practices.

Scientific Insights and Potential Applications

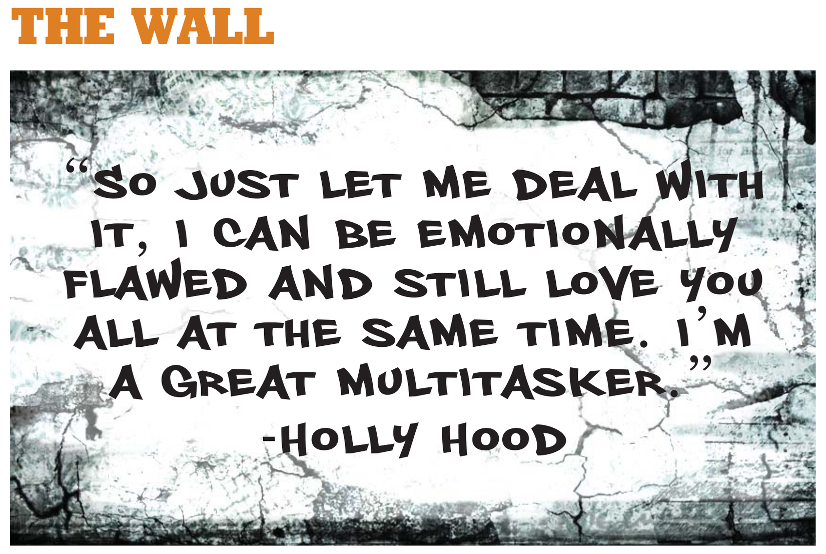


Studies on hyperaccumulating plants like Rinorea niccolifera have provided valuable insights into how plants deal with metal stress. Researchers have found that these plants have developed specialized mechanisms that allow them to tolerate high concentrations of toxic metals. For instance, hyperaccumulators often use specific proteins to transport metals into vacuoles within their cells, where the metals are stored in a less harmful form. These adaptations could lead to new biotechnological advancements that help other plants or crops become more resilient to metal contamination, further supporting phytoremediation efforts. Moreover, Rinorea niccolifera could have applications beyond just environmental cleanup and metal extraction. It could be a model for developing other plants that could thrive in metal-rich soils, potentially providing a source of biofuels, medicinal compounds, or other valuable materials derived from metal-storing plants. The study of metal-hyperaccumulators like Rinorea niccolifera could also lead to innovations in plant biotechnology, enabling researchers to develop more efficient methods of metal extraction and utilization.

Environmental and Ecological Impacts

While Rinorea niccolifera holds great promise for phytoremediation and green mining, there are some considerations for the ecological impact of using such plants on a large scale. The process of harvesting metal-accumulating plants must be managed carefully to avoid disrupting ecosystems or causing other environmental issues. For example, improper disposal of plant biomass could potentially reintroduce concentrated metals back into the environment. Therefore, strategies for safely harvesting and disposing of metal-rich plants will need to be developed in conjunction with phytoremediation efforts. In addition, while Rinorea niccolifera can tolerate and store high levels of nickel, its capacity to absorb other heavy metals may be limited. In areas with high contamination of multiple metals, other hyperaccumulators may need to be used in combination with Rinorea niccolifera to achieve more comprehensive remediation.

THE WALL



BABY BLUES

By Rick Kirkman & Jerry Scott

ZITS

By Jerry Scott & Jim Borgman